Source: **TSG CN WG 1**

Title: **CR to R99 (with mirror CRs) on Work Item GSM/UMTS interworking towards 23.009**

Agenda item: **7.6**

Document for: **APPROVAL**

Introduction:

This document contains **3** CRs, **R99 with mirror CRs to** Work Item **" GSM/UMTS interworking"**, that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #19 for approval.

Spec	CR	Rev	Cat	Phase	Subject	Version-Current	Version-New	Meeting-2nd-Level	Doc-2nd-Level
23.009	091	1	F	R99	Further clarification of the protocol to the be used on the E-interface	3.12.0	3.13.0	N1-28	N1-030292
23.009	092	1	A	Rel-4	Further clarification of the protocol to the be used on the E-interface	4.6.0	4.7.0	N1-28	N1-030293
23.009	093	1	A	Rel-5	Further clarification of the protocol to the be used on the E-interface	5.3.0	5.4.0	N1-28	N1-030294

3GPP TSG CN WG4 Meeting #18
Dublin, EIRE, 10th – 14th February 2003

N4-030306
(rev of N4-030176)

3GPP TSG-CN1 Meeting #28
Dublin, Ireland, 10 – 14 February 2003

Tdoc N1-030292
(rev of N1-030081)

CR-Form-v7

CHANGE REQUEST

⌘	**23.009 CR 091**	⌘ **rev**	**1**	⌘	Current version:	**3.12.0**	⌘

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 **X**

Title: ⌘	Further clarification of the protocol to be used on the E-interface	
Source: ⌘	Siemens AG	
Work item code: ⌘	GSM/UMTS interworking	**Date:** ⌘ 29.01.2003
Category: ⌘ **F**		**Release:** ⌘ R99

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: ⌘	The current rules for the radio access protocol to be used on the E-interface in subclauses 7, 8.1, 8.2, and 8.3 do not yet cover: 1) the protocol to be used during handover/relocation execution; 2) the case that MSC-B sends a BSSMAP message Clear-Request or a RANAP message Iu-Release-Request to MSC-A during handover/relocation resource allocation. Furthermore, for inter-MSC handover, the protocol to be used when a subsequent inter-MSC SRNS relocation has failed, is not specified.
Summary of change: ⌘	The missing rules are added.
Consequences if not approved: ⌘	Ambiguous specification. Since from R99 onwards it is possible to send BSSMAP and RANAP messages via the E-interface, this ambiguity may result in wrong implementations (i.e. the sending MSC might use the wrong radio access network protocol). E.g., if the target MSC-B sends the RANAP message Iu-Relocation-Complete instead of the BSSMAP message Handover-Complete, MSC-A could ignore the message, because it does not expect such a RANAP message, and the handover could fail.

Clauses affected: ⌘	7, 8.1, 8.2, 8.3

	Y	**N**	
Other specs ⌘ **affected:**		**X**	Other core specifications ⌘
		X	Test specifications

		X	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:

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

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7 General description of the procedures for inter - MSC handovers

The following subclauses describe two options for the Basic and Subsequent Handover procedures. The first, as described in subclauses 7.1 and 7.3 respectively, provides for a circuit connection between MSC-A and MSC-B. The second, as described in subclauses 7.2 and 7.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between MSC-A and MSC-B.

In all the above mentioned subclauses, the following principles apply:

a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - shall be transferred on the E-interface;

b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the subclauses 7.1 and 7.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

c) during the handover resource allocation for subsequent inter-MSC handover according to subclauses 7.3 and 7.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

d) during the handover execution, ie while the MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the MS is resumed;

e) during the execution of a basic inter-MSC handover to MSC-B or a subsequent inter-MSC handover to a third MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-MSC handover back to MSC-A or to a third MSC-B', MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

g) finally, during supervision, ie while the MS is not in the area of MSC-A after a successful Inter-MSC handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 09.08 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC handover to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B GSM to UMTS inter-system handover;

h) during the intra-MSC-B handover execution, if any, the MSC-B shall queue all outgoing BSSAP messages until the communication with the MS is resumed.

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

8.1 Handover UMTS to GSM

The following subclauses describe two options for the Basic and Subsequent UMTS to GSM Handover procedures. The first, as described in subclauses 8.1.1 and 8.1.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in subclauses 8.1.2 and 8.1.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B. 3G_MSC can also be a pure GSM MSC.

In all the above mentioned subclauses, the following principles apply:

-a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - shall be transferred on the E-interface;

-b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08- can be sent by the 3G_MSC-A on the E-interface after successful handover resource allocation. In the subclauses 8.1.1 and 8.1.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

-c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.1.3 and 8.1.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between 3G_MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

-d) during the handover execution, i.e. while the UE/MS is not in communication with the network, the 3G_MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed;

e) during the execution of a basic inter-system inter-MSC handover to MSC-B or a subsequent inter-system inter-MSC handover to a third MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-system inter-MSC handover back to 3G_MSC-A or to a third MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

-g) finally, during supervision, i.e. while the UE/MS is not in the area of 3G_MSC-A after a successful Inter-3G_MSC handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 09.08 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and bfirst and second list item).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC handover to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B GSM to UMTS inter-system handover;.

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface;

-h) during the intra-3G_MSC -B handover execution, if any, the 3G_MSC -B shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed.

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

8.2　Handover GSM to UMTS

The following subclauses describe two options for the Basic and Subsequent GSM to UMTS Handover procedures. The first, as described in subclauses 8.2.1 and 8.2.3 respectively, provides for a circuit connection between (3G_)MSC-A and (3G_)MSC-B. The second, as described in subclauses 8.2.2 and 8.2.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between (3G_)MSC-A and (3G_)MSC-B. In all the above mentioned subclauses, the following principles apply:

- a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - shall be transferred on the E-interface;

- b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the subclauses 8.2.1 and 8.2.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

- c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.2.3 and 8.2.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

- d) If 3G_MSC-B or 3G-MSC-B' supports location reporting at change of Service Area, 3G_MSC-B or 3G_MSC-B' shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting can be received from MSC-A. In that case, the Location Reporting Control procedure shall be initiated by 3G_MSC-B or 3G-MSC-B' after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within an A-HANDOVER-PERFORMED message.

- ~~during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.2.3 and 8.2.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;~~

- e) during the handover execution, i.e. while the UE/MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed;

- f) during the execution of a basic inter-system inter-MSC handover to 3G_MSC-B or a subsequent inter-system inter-MSC handover to a third 3G-MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] – may be sent by the target MSC on the E-interface;

- g) during a subsequent inter-system inter-MSC handover back to 3G_MSC-A or to a third 3G_MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

- h) finally, during supervision, i.e. while the UE/MS is not in the area of MSC-A after a successful Inter-3G_MSC GSM to UMTS handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 09.08 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

    If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface;

-i) during the intra-3G_MSC-B GSM to UMTS handover execution, if any, the 3G_MSC-B shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed.

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

## 8.3	SRNS Relocation

The following subclauses describe two options for the Basic and Subsequent Relocation procedures. The first, as described in subclauses 8.3.1 and 8.3.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in subclauses 8.3.2 and 8.3.4 respectively, provides for a Basic and Subsequent Relocation without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B.

In all the above mentioned subclauses, the following principles apply:

-a) during the relocation resource allocation, except for the messages explicitly indicated in b and c below, only the relocation related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface;

-b) the trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - can be sent by the 3G_MSC-A on the E-interface after successful relocation resource allocation. In the subclauses 8.3.1 and 8.3.2, it is however allowed at basic relocation initiation on the E-Interface to transfer one trace invocation related message that is part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - together with the applicable relocation related message. The applicable relocation related message shall always appear as the first message;

-c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.3.3 and 8.3.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

-d) during the relocation execution, i.e. while the UE is not in communication with the network, the 3G_MSC-A shall queue all outgoing RANAP or BSSAP messages until the communication with the UE is resumed;

e)	during the execution of a basic inter-MSC SRNS relocation to 3G_MSC-B or a subsequent inter-MSC SRNS relocation to a third 3G-MSC-B', only the relocation related messages and the Iu-Release-Request message that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] – may be sent by the target MSC on the E-interface;

f)	during a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

-g) finally, during supervision, i.e. while the UE is not in the area of 3G_MSC-A after a successful Inter-3G_MSC relocation, the subset of RANAP procedures and their related messages - as defined in 3GPP TS 29.108 [15] - shall apply on the E-Interface. As an exception to this rule, 3G_MSC-B shall notify 3G_MSC-A of a successfully completed subsequent intra-MSC-B intra GSM or inter-system handover by using the Internal Handover Indication procedure as specified in 3GPP TS 09.08 [7]. Furthermore, in case of a subsequent inter-MSC intra GSM or inter-system handover back to 3G_MSC-A or to a third 3G_MSC-B', during the handover resource allocation, the handover and trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - shall be transferred on the E-interface (see first and second list items a and b in clause 7, subclause 8.1, and 8.2, respectively).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and RANAP procedures and their related messages shall apply on the E-interface.

NOTE:	A subsequent inter-MSC intra GSM or GSM to UMTS inter-system handover back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC SRNS relocation to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B UMTS to GSM inter-system handover;.

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and RANAP procedures and their related messages shall apply on the E-interface;

h) during the intra-3G_MSC-B relocation execution, if any, the 3G_MSC-B shall queue all outgoing RANAP messages until the communication with the UE is resumed.

i) after successful completion of the Intra-3G_MSC-B relocation, if 3G_MSC-B or 3G-MSC-B' has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A, it shall act as specified in subclause 6.2.3.

3GPP TSG CN WG4 Meeting #18
Dublin, EIRE, 10th – 14th February 2003

N4-030307
(rev of N4-030177)

3GPP TSG-CN1 Meeting #28
Dublin, Ireland, 10 – 14 February 2003

Tdoc N1-030293
(rev of N1-030082)

CR-Form-v7

CHANGE REQUEST

⌘	**23.009** CR **092**	⌘ **rev**	**1**	⌘	Current version:	**4.6.0**	⌘

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

Title: ⌘	Further clarification of the protocol to be used on the E-interface	
Source: ⌘	Siemens AG	
Work item code: ⌘	GSM/UMTS interworking	***Date:*** ⌘ 29.01.2003
Category: ⌘ **A**		***Release:*** ⌘ Rel-4

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: ⌘	The current rules for the radio access protocol to be used on the E-interface in subclauses 7, 8.1, 8.2, and 8.3 do not yet cover: 1) the protocol to be used during handover/relocation execution; 2) the case that MSC-B sends a BSSMAP message Clear-Request or a RANAP message Iu-Release-Request to MSC-A during handover/relocation resource allocation. Furthermore, for inter-MSC handover, the protocol to be used when a subsequent inter-MSC SRNS relocation has failed, is not specified.
Summary of change: ⌘	The missing rules are added.
Consequences if not approved: ⌘	Ambiguous specification. Since from R99 onwards it is possible to send BSSMAP and RANAP messages via the E-interface, this ambiguity may result in wrong implementations (i.e. the sending MSC might use the wrong radio access network protocol). E.g., if the target MSC-B sends the RANAP message Iu-Relocation-Complete instead of the BSSMAP message Handover-Complete, MSC-A could ignore the message, because it does not expect such a RANAP message, and the handover could fail.

Clauses affected: ⌘	7, 8.1, 8.2, 8.3	

	Y	**N**		
Other specs ⌘		**X**	Other core specifications	⌘
affected:		**X**	Test specifications	

	X	O&M Specifications	
Other comments:	⌘		

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7 General description of the procedures for inter - MSC handovers

The following clauses describe two options for the Basic and Subsequent Handover procedures. The first, as described in clauses 7.1 and 7.3 respectively, provides for a circuit connection between MSC-A and MSC-B. The second, as described in clauses 7.2 and 7.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between MSC-A and MSC-B.

In all the above mentioned clauses, the following principles apply:

a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface;

b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the clauses 7.1 and 7.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

c) during the handover resource allocation for subsequent inter-MSC handover according to subclauses 7.3 and 7.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

d) during the handover execution, ie while the MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the MS is resumed;

e) during the execution of a basic inter-MSC handover to MSC-B or a subsequent inter-MSC handover to a third MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-MSC handover back to MSC-A or to a third MSC-B', MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

g) finally, during supervision, ie while the MS is not in the area of MSC-A after a successful Inter-MSC handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 49.008 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC handover to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B GSM to UMTS inter-system handover;

h) during the intra-MSC-B handover execution, if any, the MSC-B shall queue all outgoing BSSAP messages until the communication with the MS is resumed.

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

8.1 Handover UMTS to GSM

The following clauses describe two options for the Basic and Subsequent UMTS to GSM Handover procedures. The first, as described in clauses 8.1.1 and 8.1.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in clauses 8.1.2 and 8.1.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B. 3G_MSC can also be a pure GSM MSC.

In all the above mentioned clauses, the following principles apply:

-a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface;

-b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008- can be sent by the 3G_MSC-A on the E-interface after successful handover resource allocation. In the clauses 8.1.1 and 8.1.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

-c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.1.3 and 8.1.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between 3G_MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

-d) during the handover execution, i.e. while the UE/MS is not in communication with the network, the 3G_MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed;

e) during the execution of a basic inter-system inter-MSC handover to MSC-B or a subsequent inter-system inter-MSC handover to a third MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-system inter-MSC handover back to 3G_MSC-A or to a third MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

-g) finally, during supervision, i.e. while the UE/MS is not in the area of 3G_MSC-A after a successful Inter-3G_MSC handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 49.008 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC handover to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B GSM to UMTS inter-system handover;.

~~If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface;~~

-h) during the intra-3G_MSC -B handover execution, if any, the 3G_MSC -B shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed.

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

8.2   Handover GSM to UMTS

The following clauses describe two options for the Basic and Subsequent GSM to UMTS Handover procedures. The first, as described in clauses 8.2.1 and 8.2.3 respectively, provides for a circuit connection between (3G_)MSC-A and (3G_)MSC-B. The second, as described in clauses 8.2.2 and 8.2.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between (3G_)MSC-A and (3G_)MSC-B. In all the above mentioned clauses, the following principles apply:

-a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface;

-b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the clauses 8.2.1 and 8.2.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

c)   during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.2.3 and 8.2.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

-d) if 3G_MSC-B or 3G-MSC-B' supports location reporting at change of Service Area, 3G_MSC-B or 3G-MSC-B' shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting can be received from MSC-A. In that case, the Location Reporting Control procedure shall be initiated by 3G_MSC-B or 3G-MSC-B' after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within an A-HANDOVER-PERFORMED message;

~~during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.2.3 and 8.2.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;~~

-e) during the handover execution, i.e. while the UE/MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed;

f)   during the execution of a basic inter-system inter-MSC handover to 3G_MSC-B or a subsequent inter-system inter-MSC handover to a third 3G-MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] – may be sent by the target MSC on the E-interface;

g)   during a subsequent inter-system inter-MSC handover back to 3G_MSC-A or to a third 3G_MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

-h) finally, during supervision, i.e. while the UE/MS is not in the area of MSC-A after a successful Inter-3G_MSC GSM to UMTS handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 49.008 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface;

i) during the intra-3G_MSC-B GSM to UMTS handover execution, if any, the 3G_MSC-B shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed.

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

8.3 SRNS Relocation

The following clauses describe two options for the Basic and Subsequent Relocation procedures. The first, as described in clauses 8.3.1 and 8.3.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in clauses 8.3.2 and 8.3.4 respectively, provides for a Basic and Subsequent Relocation without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B.

In all the above mentioned clauses, the following principles apply:

a) during the relocation resource allocation, except for the messages explicitly indicated in b and c below, only the relocation related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface;

b) the trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - can be sent by the 3G_MSC-A on the E-interface after successful relocation resource allocation. In the clauses 8.3.1 and 8.3.2, it is however allowed at basic relocation initiation on the E-Interface to transfer one trace invocation related message that is part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - together with the applicable relocation related message. The applicable relocation related message shall always appear as the first message;

c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.3.3 and 8.3.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

d) during the relocation execution, i.e. while the UE is not in communication with the network, the 3G_MSC-A shall queue all outgoing RANAP or RANAP messages until the communication with the UE is resumed;

e) during the execution of a basic inter-MSC SRNS relocation to 3G_MSC-B or a subsequent inter-MSC SRNS relocation to a third 3G-MSC-B', only the relocation related messages and the Iu-Release-Request message that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

g) finally, during supervision, i.e. while the UE is not in the area of 3G_MSC-A after a successful Inter-3G_MSC relocation, the subset of RANAP procedures and their related messages - as defined in 3GPP TS 29.108 [15] - shall apply on the E-Interface. As an exception to this rule, 3G_MSC-B shall notify 3G_MSC-A of a successfully completed subsequent intra-MSC-B intra GSM or inter-system handover by using the Internal Handover Indication procedure as specified in 3GPP TS 49.008 [7]. Furthermore, in case of a subsequent inter-MSC intra GSM or inter-system handover back to 3G_MSC-A or to a third 3G_MSC-B', during the handover resource allocation, the handover and trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface (see first and second list items a and b in clause 7, subclause 8.1, and 8.2, respectively).;

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC intra GSM or GSM to UMTS inter-system handover back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC SRNS relocation to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B UMTS to GSM inter-system handover;.

~~If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and RANAP procedures and their related messages shall apply on the E-interface;~~

h) during the intra-3G_MSC-B relocation execution, if any, the 3G_MSC-B shall queue all outgoing RANAP messages until the communication with the UE is resumed;

i) after successful completion of the Intra-3G_MSC-B relocation, if 3G_MSC-B or 3G-MSC-B' has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A, it shall act as specified in subclause 6.2.3.

3GPP TSG CN WG4 Meeting #18
Dublin, EIRE, 10th – 14th February 2003

N4-030308
(rev of N4-030178)

3GPP TSG-CN1 Meeting #28
Dublin, Ireland, 10 – 14 February 2003

Tdoc N1-030294
(rev of N1-030081)

CR-Form-v7

CHANGE REQUEST

⌘	**23.009** CR **093**	⌘ **rev**	**1**	⌘	Current version:	**5.3.0** ⌘

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

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

Title: ⌘	Further clarification of the protocol to be used on the E-interface
Source: ⌘	Siemens AG
Work item code: ⌘	GSM/UMTS interworking *Date:* ⌘ 29.01.2003
Category: ⌘	**A** *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: ⌘	The current rules for the radio access protocol to be used on the E-interface in subclauses 7, 8.1, 8.2, and 8.3 do not yet cover: 1) the protocol to be used during handover/relocation execution; 2) the case that MSC-B sends a BSSMAP message Clear-Request or a RANAP message Iu-Release-Request to MSC-A during handover/relocation resource allocation. Furthermore, for inter-MSC handover, the protocol to be used when a subsequent inter-MSC SRNS relocation has failed, is not specified.
Summary of change: ⌘	The missing rules are added.
Consequences if not approved: ⌘	Ambiguous specification. Since from R99 onwards it is possible to send BSSMAP and RANAP messages via the E-interface, this ambiguity may result in wrong implementations (i.e. the sending MSC might use the wrong radio access network protocol). E.g., if the target MSC-B sends the RANAP message Iu-Relocation-Complete instead of the BSSMAP message Handover-Complete, MSC-A could ignore the message, because it does not expect such a RANAP message, and the handover could fail.

Clauses affected: ⌘	7, 8.1, 8.2, 8.3

	Y	**N**	
Other specs affected: ⌘		**X**	Other core specifications ⌘
		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.

7   General description of the procedures for inter - MSC handovers

The following clauses describe two options for the Basic and Subsequent Handover procedures. The first, as described in clauses 7.1 and 7.3 respectively, provides for a circuit connection between MSC-A and MSC-B. The second, as described in clauses 7.2 and 7.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between MSC-A and MSC-B.

In all the above mentioned clauses, the following principles apply:

a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface;

b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the clauses 7.1 and 7.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

c) during the handover resource allocation for subsequent inter-MSC handover according to subclauses 7.3 and 7.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

d) during the handover execution, ie while the MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the MS is resumed;

e) during the execution of a basic inter-MSC handover to MSC-B or a subsequent inter-MSC handover to a third MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-MSC handover back to MSC-A or to a third MSC-B', MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

g) finally, during supervision, ie while the MS is not in the area of MSC-A after a successful Inter-MSC handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 49.008 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and bfirst and second list item).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC handover to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B GSM to UMTS inter-system handover;

h) during the intra-MSC-B handover execution, if any, the MSC-B shall queue all outgoing BSSAP messages until the communication with the MS is resumed.

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

8.1 Handover UMTS to GSM

The following clauses describe two options for the Basic and Subsequent UMTS to GSM Handover procedures. The first, as described in clauses 8.1.1 and 8.1.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in clauses 8.1.2 and 8.1.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B. 3G_MSC can also be a pure GSM MSC.

In all the above mentioned clauses, the following principles apply:

-a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface;

-b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008- can be sent by the 3G_MSC-A on the E-interface after successful handover resource allocation. In the clauses 8.1.1 and 8.1.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

-c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.1.3 and 8.1.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between 3G_MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

-d) during the handover execution, i.e. while the UE/MS is not in communication with the network, the 3G_MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed;

e) during the execution of a basic inter-system inter-MSC handover to MSC-B or a subsequent inter-system inter-MSC handover to a third MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] – may be sent by the target MSC on the E-interface;

f) during a subsequent inter-system inter-MSC handover back to 3G_MSC-A or to a third MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

-g) finally, during supervision, i.e. while the UE/MS is not in the area of 3G_MSC-A after a successful Inter-3G_MSC handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 49.008 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC handover to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B GSM to UMTS inter-system handover;.

~~If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface;~~

-h) during the intra-3G_MSC -B handover execution, if any, the 3G_MSC -B shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed.

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

8.2   Handover GSM to UMTS

The following clauses describe two options for the Basic and Subsequent GSM to UMTS Handover procedures. The first, as described in clauses 8.2.1 and 8.2.3 respectively, provides for a circuit connection between (3G_)MSC-A and (3G_)MSC-B. The second, as described in clauses 8.2.2 and 8.2.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between (3G_)MSC-A and (3G_)MSC-B. In all the above mentioned clauses, the following principles apply:

- a) during the handover resource allocation, except for the messages explicitly indicated in b and c below, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface;

- b) the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the clauses 8.2.1 and 8.2.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

- c) during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.2.3 and 8.2.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

- d) If 3G_MSC-B or 3G-MSC-B' supports location reporting at change of Service Area, 3G_MSC-B or 3G_MSC-B' shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting can be received from MSC-A. In that case, the Location Reporting Control procedure shall be initiated by 3G_MSC-B or 3G-MSC-B' after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within an A-HANDOVER-PERFORMED message.

- ~~during the handover resource allocation for subsequent inter-MSC inter-system handover according to subclauses 8.2.3 and 8.2.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;~~

- e) during the handover execution, i.e. while the UE/MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed;

- f) during the execution of a basic inter-system inter-MSC handover to 3G_MSC-B or a subsequent inter-system inter-MSC handover to a third 3G-MSC-B', only the handover related messages and the A-Clear-Request message that are part of the applicable BSSAP subset - as defined in 3GPP TS 49.008 [7] – may be sent by the target MSC on the E-interface;

- g) during a subsequent inter-system inter-MSC handover back to 3G_MSC-A or to a third 3G_MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

- h) finally, during supervision, i.e. while the UE/MS is not in the area of MSC-A after a successful Inter-3G_MSC GSM to UMTS handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 49.008 [7] - shall apply on the E-Interface. As the only exception to this rule, in case of a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', during the relocation resource allocation, the relocation and trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface (see subclause 8.3, a and b~~first and second list item~~).

  If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface;

-i) during the intra-3G_MSC-B GSM to UMTS handover execution, if any, the 3G_MSC-B shall queue all outgoing BSSAP or RANAP messages until the communication with the UE/MS is resumed.

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

8.3 SRNS Relocation

The following clauses describe two options for the Basic and Subsequent Relocation procedures. The first, as described in clauses 8.3.1 and 8.3.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in clauses 8.3.2 and 8.3.4 respectively, provides for a Basic and Subsequent Relocation without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B.

In all the above mentioned clauses, the following principles apply:

-a) during the relocation resource allocation, except for the messages explicitly indicated in b and c below, only the relocation related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface;

-b) the trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - can be sent by the 3G_MSC-A on the E-interface after successful relocation resource allocation. In the clauses 8.3.1 and 8.3.2, it is however allowed at basic relocation initiation on the E-Interface to transfer one trace invocation related message that is part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - together with the applicable relocation related message. The applicable relocation related message shall always appear as the first message;

c) during the relocation resource allocation for subsequent inter-MSC SRNS relocation according to subclauses 8.3.3 and 8.3.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between 3G_MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;

-d) the Iu-Location Reporting Control message which belongs to the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - can be sent by the 3G_MSC-A on the E-interface after successful relocation resource allocation;

~~- during the relocation resource allocation for subsequent inter-MSC SRNS relocation according to subclauses 8.3.3 and 8.3.4, it is allowed to transfer either DTAP or RANAP Direct Transfer messages on the E-Interface between 3G_MSC-A and 3G_MSC-B. RANAP Direct Transfer messages shall be used for this purpose if and only if the basic handover procedure was an inter MSC SRNS relocation;~~

-e) during the relocation execution, i.e. while the UE is not in communication with the network, the 3G_MSC-A shall queue all outgoing RANAP or BSSAP messages until the communication with the UE is resumed;

f) during the execution of a basic inter-MSC SRNS relocation to 3G_MSC-B or a subsequent inter-MSC SRNS relocation to a third 3G-MSC-B', only the relocation related messages and the Iu-Release-Request message that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] – may be sent by the target MSC on the E-interface;

g) during a subsequent inter-MSC SRNS relocation back to 3G_MSC-A or to a third 3G_MSC-B', 3G_MSC-B may initiate either an Iu-Release-Request procedure or an A-Clear-Request procedure on the E-interface. An Iu-Release-Request procedure shall be initiated only if the basic handover procedure was an inter-MSC SRNS relocation;

-h) finally, during supervision, i.e. while the UE is not in the area of 3G_MSC-A after a successful Inter-3G_MSC relocation, the subset of RANAP procedures and their related messages - as defined in 3GPP TS 29.108 [15] - shall apply on the E-Interface. As an exception to this rule, 3G_MSC-B shall notify 3G_MSC-A of a successfully completed subsequent intra-MSC-B intra GSM or inter-system handover by using the Internal Handover Indication procedure as specified in 3GPP TS 49.008 [7]. Furthermore, in case of a subsequent inter-MSC intra GSM or inter-system handover back to 3G_MSC-A or to a third 3G_MSC-B', during the handover resource allocation, the handover and trace related messages that are part of the applicable BSSAP subset - as

defined in 3GPP TS 49.008 [7] - shall be transferred on the E-interface (see ~~first and second~~ list items a and b in clause 7, subclause 8.1, and 8.2, respectively).

If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and BSSAP procedures and their related messages shall apply on the E-interface.

NOTE: A subsequent inter-MSC intra GSM or GSM to UMTS inter-system handover back to 3G_MSC-A or to a third 3G_MSC-B' can occur, e.g., if after the basic inter-MSC SRNS relocation to 3G_MSC-B the MS performed a subsequent intra-3G_MSC-B UMTS to GSM inter-system handover;~~.~~

~~If a subsequent inter-MSC handover/relocation back to 3G_MSC-A or to a third 3G_MSC-B' is cancelled, then the supervision continues, and RANAP procedures and their related messages shall apply on the E-interface;~~

i) during the intra-3G_MSC-B relocation execution, if any, the 3G_MSC-B shall queue all outgoing RANAP messages until the communication with the UE is resumed.

j) after successful completion of the Intra-3G_MSC-B relocation, if 3G_MSC-B or 3G-MSC-B' has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A, it shall act as specified in subclause 6.2.3.