3GPP TSG CN Plenary Meeting #17 **NP-020442**
4th – 6th September 2002 Biarritz, FRANCE.

Source: TSG CN WG4

Title: LSs after CN#16

Agenda item: 6.4.1

Document for: Information

Introduction:

This document contains 14 LSs that have been agreed by TSG CN WG4 after CN#16, and are forwarded to TSG CN Plenary meeting #16 for information.

TDOC N4-02xxxx	Subject	To	Cc
0990	Reply LS on Subscriber and Equipment Trace Impacts	SA5	SA, CN1, GERAN, RAN2, RAN3
0991	Response to LS on Network Integration Testing	CN4	TC SPAN, SPAN 13
0994	LS on on Diameter security issues	SA5	SA3
0999	LS on use of IP as transport for the Inter-GMLC Interface	CN, SA2, GSMA SerG LBS sub-group	GSMA IREG, SA3
1019	LS in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)	SA2	
1031	IMS authentication vector distribution on the Cx interface	SA3	
1032	LS on the support of vendor-specific commands in Diameter base protocol	SA5	
1070	LS on Restricting the cause value to 1..255	RAN3	
1071	Reply LS on Request for clarification related to raised questions regarding "Exchange of addresses on Iu-CS using IP Transport Option in Release 5"	RAN3	CN3
1090	LS on Lack of IP "Modify Bearer" procedure	RAN3	
1097	LS in reply to the Response to Liaison Statement on Support of IPv6 on Iu	SA2	RAN3
1098	LS on Shared Networks	RAN3, SA2, GERAN, GERAN2	CN
1100	LS on missing Charging Characteristics for a short period of time after an inter-SGSN RAU	SA5	
1107	LS on Subscribed Media Parameter	SA2, CN1	CN3

3GPP TSG CN WG4 Meeting #15 ***N4-020990***
Helsinki, Finland, 29th July – 2nd August 2002

Title:	Reply LS on Subscriber and Equipment Trace Impacts
Response to:	LS (N4-020805_S5-028140) with title "LS on Subscriber and Equipment Trace Impacts" from SA5
Release:	Rel-6
Source:	TSG CN WG4
To:	3GPP SA5 SWGD
Cc:	SA, CN1, GERAN, RAN2 and RAN3

Contact Person:
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Attachments: -

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1. Overall Description:

CN4 thanks SA5 SWGD for their LS (S5-028140) and would like to provide the following answers:

1st question: Would CN4 agree on specifying any needed enhancements in co-operation with SA5 SWGD within Release 6 timeframe?

CN4 is willing to specify any needed enhancements in co-operation with SA5 SWGD as soon as detailed requirements will be made available from SA5 SWGD. Work is assumed to be ready by June 2003.

Trace activation/deactivation over Mc:
- subject has already been studied but CRs have been postponed; subject must be further studied against detailed requirements

Trace activation/deactivation over Cx:
- subject has already been studied but CRs have been postponed; subject must be further studied against detailed requirements

Trace activation/deactivation impacts to MAP:
- no impact is seen at the moment; subject must be further studied against detailed requirements

Trace activation/deactivation impacts to GTP (SGSN – GGSN)
- Trace information elements have been included in GTP since R99; subject must be further studied against detailed requirements

2nd question: The attached draft TS 32.421 "Trace Concepts and Requirements" contains high-level requirements for trace. When would CN4 need the detailed requirements for the enhancements from SA5 SWGD to be able to meet the Release 6 timeframe?

CN4 would need the detailed requirements by December 2002.

3rd question: If enhancements would be done in CN4, would CN4 kindly provide identification of the related work item(s) to SA5 SWGD?

CN4 does not currently have any ongoing WI related to Trace. After discussions with CN1, a CN4 specific or CN-wide WID on Trace will be drafted.

2. Actions:

To SA5 SWGD:

CN4 kindly asks SA5 SWGD to clarify the Trace enhancements into detailed requirements.

3. Date of Next CN4 meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami, Florida, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-0201100***
Helsinki, Finland, 29th July – 2nd August 2002

Title: LS on missing Charging Characteristics for a short period of time after an inter-SGSN RAU.
Release: Rel-4
Work Item: GTP Enhancements

Source: CN4
To: SA5
Cc:

Contact Person:
Name: Nick Russell
Tel. Number: +44 1635 682 699
E-mail Address: Nick.Russell@vodafone.co.uk

Attachments: Document N4-020932.ZIP

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1. Overall Description:

CN4 have found a minor problem which occurs during an inter-SGSN Routeing Area Update (RAU) which results in a small delay in creating a new S-CDR and the user not being charged for PDP Context data transferred during this time period.

In more detail, during an inter-SGSN RAU, the PDP context information is transferred from the old SGSN to the new SGSN. Currently, the Charging Characteristics (CC) are transferred to the new SGSN by the HLR in the Insert Subscriber Data message and the new SGSN can actually receive data before it has received the CC from the HLR. This means that no CC are known for the subscriber's data and therefore the subscriber cannot be charged appropriately during the time it takes the HLR to send the Insert Subscriber Data message to the SGSN. This time period varies, particularly for subscribers who are roaming, but is estimated to be no more than two seconds. This is currently not in line with TS 32.215.

CN4 is having problems deciding how frequent and serious a problem this is and whether it justifies a CR being agreed to the frozen Release 4 (see attachment N4-020932.ZIP, which is under discussion in CN4). CN4 can agree ~~the~~ to a fix for Release 5.

2. Actions:

To SA5 group.

ACTION: CN4 kindly asks SA5 to analyse the problem and to inform CN4 on the severity of this and whether SA5 believe it needs to be fixed in Release 4.

3. Date of Next ~~CN3~~ CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami, Florida, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-020932***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **343** ⌘ **rev** **-** ⌘ Current version: **4.4.0** ⌘

*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:	⌘	Including the Charging Characteristics in the PDP Context IE
Source:	⌘	Siemens AG
Work item code:	⌘	GTP enhancements
Date:	⌘	08/07/2002
Category:	⌘	**F** Critical correction
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:	⌘	During an inter SGSN change the context data are transferred from the old SGSN to new SGSN inside the SGSN Context Response message (in case of RAU) or inside the Forward Relocation Request (in case of Relocation). For the PDP context data the PDP Context information element is used. The Charging Characteristics (CC) are not included in the PDP Context IE although the Charging Characteristics are PDP context relevant data (see 23.060 section 13 Information Storage subsection 13.2 SGSN). The Charging Characteristics are transferred to the new SGSN only by the HLR in the Insert Subscriber Data message. This causes two problems for already active PDP contexts. The new SGSN can receive data before it's receive the CC from the HLR. That means no CC are known for these data and they can't be charged appropriately. In case the CC are changed in the HLR. The new SGSN would get other CC than the old SGSN. Additionally this would mean that the GGSN and new SGSN would have different CC. But accordingly to 32.215 the Charging Characteristics must remain unchanged during the life time of the PDP context as described in 32.215 Annex A: 'If the SGSN receives modified subscriber information from the HLR (e.g. execution of a stand-alone Insert Subscriber Data procedure) which includes changes to the charging characteristics, they shall be applied only to new MM, PDP and secondary PDP contexts, this implies that the SGSN shall not send PDP context modifications for the existing PDP contexts to the GGSN.'
Summary of change:	⌘	The Charging Characteristics are included in the PDP Context IE.
Consequences if not approved:	⌘	Loss of accurate charging during SGSN change due to absence of the Charging Characteristics and/or due to possibly changed Charging Characteristics.

	Misalignment with 3GPP TS 32.215.

Clauses affected:	⌘				
Other specs affected:	⌘	**Y**	**N**	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.

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.

7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the UplinkTunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

The Charging Characteristics represents sets of charging profiles that allows the operator to apply different kind of charging methods. The coding is defined in [18] 3GPP TS 32.015.

1	Type = 130 (Decimal)					
2-3	Length					
4	Res-erved	VAA	Res-erved	Order	NSAPI	
5	X	X	X	X	SAPI	
6	QoS Sub Length					
7 - (q+6)	QoS Sub [4..255]					
q+7	QoS Req Length					
(q+8)-(2q+7)	QoS Req [4..255]					
2q+8	QoS Neg. Length					
(2q+9)-(3q+8)	QoS Neg [4..255]					
(3q+9)-(3q+10)	Sequence Number Down (SND) [1]					
(3q+11)-(3q+12)	Sequence Number Up (SNU) [1]					
3q+13	Send N-PDU Number [1]					
3q+14	Receive N-PDU Number [1]					
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane					
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I					
3q+23	PDP Context Identifier					
3q+24	Spare 1 1 1 1				PDP Type Organisation	
3q+25	PDP Type Number					
3q+26	PDP Address Length					
(3q+27)-m	PDP Address [1..63]					
m+1	GGSN Address for control plane Length					
(m+2)-n	GGSN Address for control plane [4..16]					
n+1	GGSN Address for User Traffic Length					
(n+2)-o	GGSN Address for User Traffic [4..16]					
o+1	APN length					
(o+2)-p	APN					
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier	
p+2	Transaction Identifier					
(p+3)- (p+4)	Charging Characteristics					

Figure 43: PDP Context Information Element

NOTE 1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #15 ***N4-021098***
Helsinki, Finland, 29th July – 2nd August 2002

Title:	**LS on Shared Networks**
Response to:	**LS R3-021795 (N4-020818) on Shared Networks from RAN3.** **LS R3-021816 (N4-020865) on Shared Networks – Outcome of RAN3#30 from RAN3.** **LS S2-022054 (N4-020872) on Shared Networks from SA2**
Release:	**Release 5**
Source:	**CN4**
To:	**RAN3, SA2, GERAN, GERAN2**
Cc:	**CN**

Contact Person:
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Tel. Number: +39 081 5147721
E-mail Address: Pompeo.Santoro@eri.ericsson.se

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1. Overall Description:

TSG CN4 would like to thank RAN3 and SA2 for their LS's R3-021795, R3-021816 and S2-022054 on Shared Networks.

In response to the action for CN4 outlined in LS R3-021795, CN4 would like to confirm that the RAN3 assumption:

> The understanding in TSG RAN WG3 is that the underlying assumption in TSG CN WG4 is that all the Subscriber Access Information (for instance, to which SNA the Subscriber is allowed to access) is located in the Anchor MSC and, during a Handover in CS Domain involving 2 MSCs, it is passed over to the Non-Anchor MSC over the E-interface

is indeed correct.

In response to the action for CN4 outlined in LS S2-022054 and LS R3-021816 asking for modifications of the relevant TS's, CN4 could unfortunately not agree on a single solution to transport the SNA Access Information from anchor MSC to non anchor MSC for an inter-MSC Handover.

The discussion point has been whether the SNA Access Information should be transferred from anchor MSC to non anchor MSC as MAP parameter of the MAP operation Prepare Handover, or as a BSSMAP parameter to be carried in the BSSMAP Handover Request message encapsulated in the MAP operation Prepare Handover for the Inter MSC GSM to GSM, UMTS to GSM and GSM to UMTS Handover.

The majority view expressed at CN4 was that the transport at BSSMAP level is preferred, but this preference needs to be confirmed by GERAN.

The first alternative solution, transport at MAP level, can be completed by modifications to only CN4 specifications.

The second alternative solution, transport at BSSMAP level, requires modifications to CN4 specifications and to specifications in the remit of GERAN.

However, in the wish to provide a solution in the required time frame, CN4 has agreed to produce two sets of CR's to the relevant specifications.

The first set being all the necessary modifications needed if the transport of the SNA Access Information at MAP level is used. The set consists of a CR on 29.002 and one on 29.010.

The second set being all the necessary modifications needed on CN4 specifications if the transport of the SNA Access Information at BSSMAP level is used. This second set of CR's depends on the approval at GERAN of all the CR's necessary to GERAN specifications (e.g. 48.008). This set consists of only one CR on 29.010.

Moreover two additional CR's have been agreed, one of them together with CN1. Those CR's, on 23.003 and 23.009, are equally applicable for both solutions.

In response to the action for CN4 outlined in LS S2-022054, CN4 would like to reassure SA2 that the modifications agreed for both solutions cater for the requirements on Shared Network in connected mode for all relevant traffic cases including GSM to UMTS inter-MSC handover.

It's CN4 assessment that no further work is necessary on CN4 specifications.

> NOTE: The agreed CR's are attached to this LS in three zip files. One for the CR's implementing the transport at MAP level, one for the CR implementing the transport at BSSMAP level, one for the CR's independent of the selected transport.

2. Actions:

To RAN3, SA2

ACTION: CN4 kindly asks RAN3 and SA2 to note CN4 reply to their LS's.

To GERAN, GERAN2

ACTION: CN4 kindly asks GERAN and GERAN2 to investigate on the feasibility and appropriateness of transporting the SNA Access Information at BSSMAP level, and, if deemed so, to produce the necessary CR's to the relevant specifications.

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-021104***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.010** **CR** **075** ⌘ **rev** **-** ⌘ 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 (using encapsulated BSSAP transport of SNA access information)
Source:	⌘	Nokia
Work item code:	⌘	TEI5
Date:	⌘	01/08/2002
Category:	⌘	**B**
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:	⌘	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:	⌘	

		Y	N			
Other specs	⌘	**Y**		Other core specifications	⌘	48.008 CR xxx 23.003 CR 050 23.009 CR xxx
affected:			**N**	Test specifications		
			N	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:
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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 Handover Request BSSMAP 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.

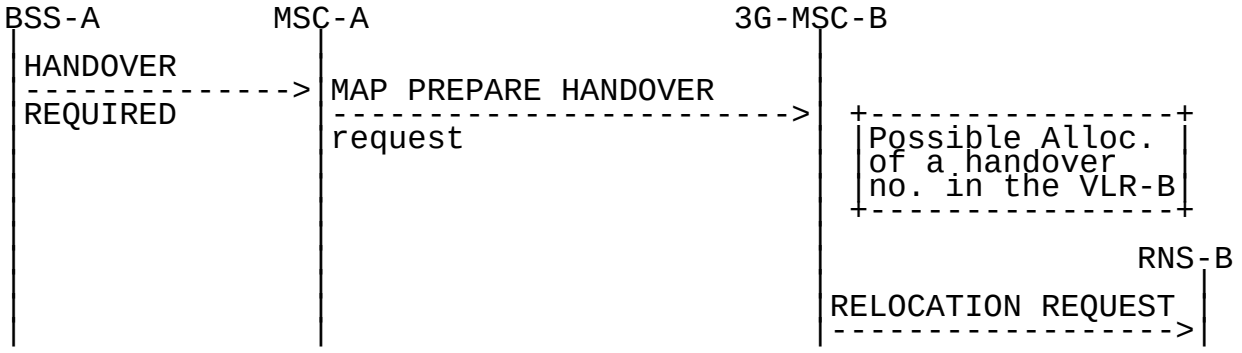


Figure 37a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)

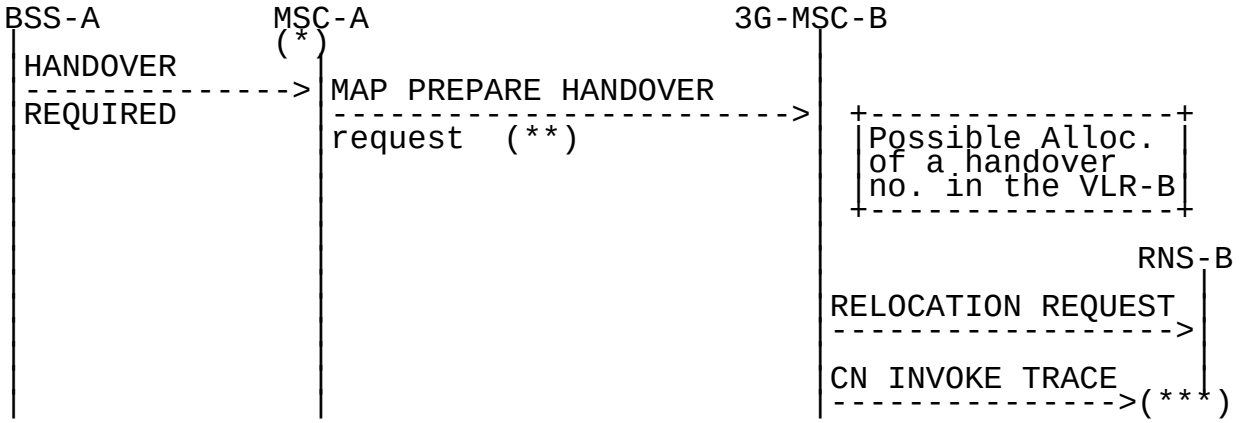


Figure 37b: Signalling for Basic Inter-MSC Handover initiation (CN invoke trace message transferred)

(*): Tracing invocation has been received from VLR.

(**): In that case, HANDOVER 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):

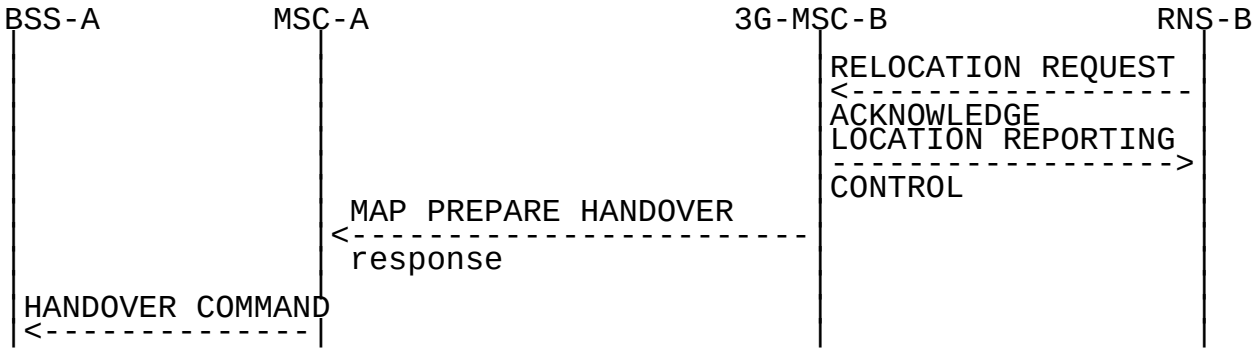
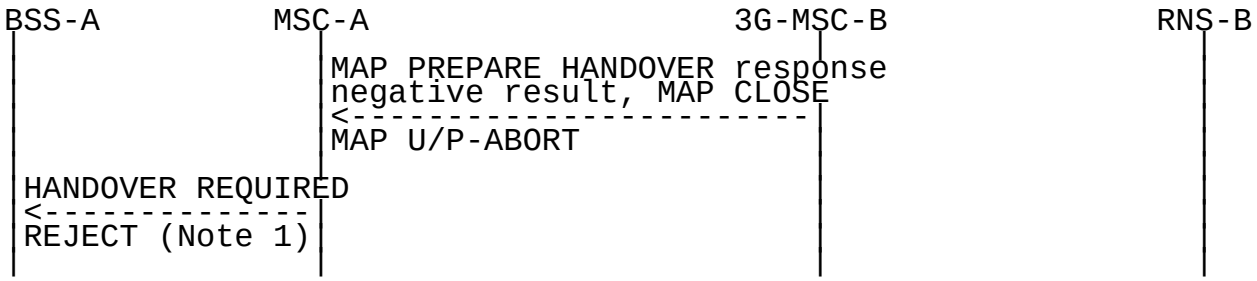


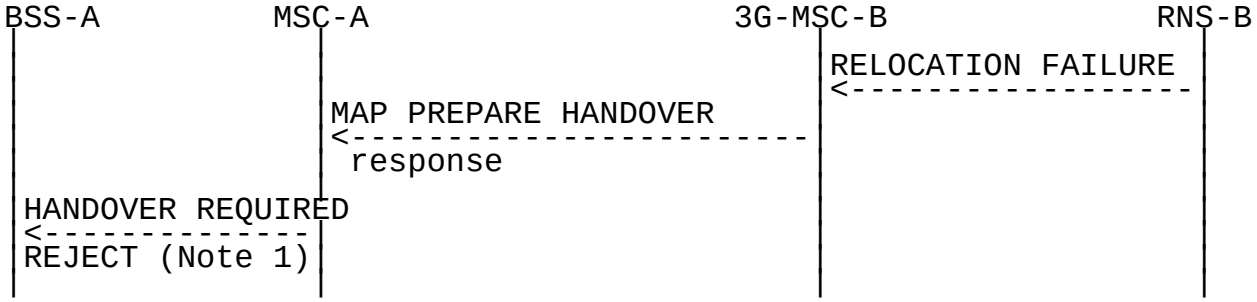
Figure 38: Signalling for Basic Inter-MSC Handover execution (Positive outcome)

Possible Negative outcomes:

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



b) radio resources allocation failure:



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

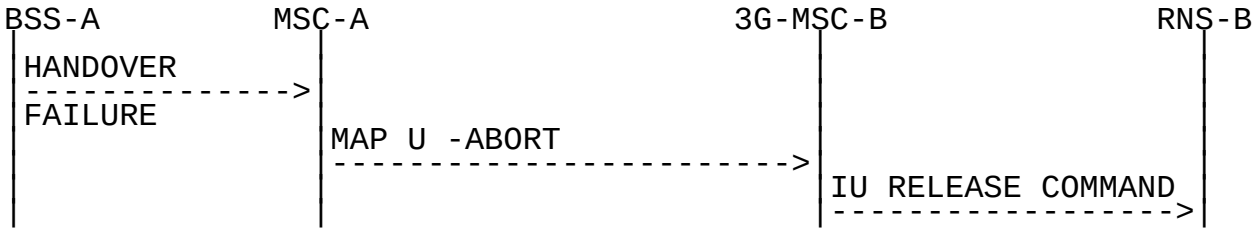


Figure 39: Signalling for Basic Inter-MSC Handover execution (Negative outcomes)

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

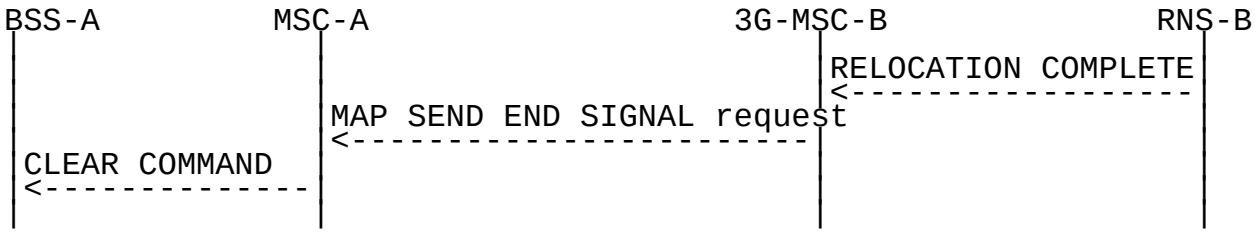


Figure 40: Signalling for Basic Inter-MSC Handover completion

Positive outcome:

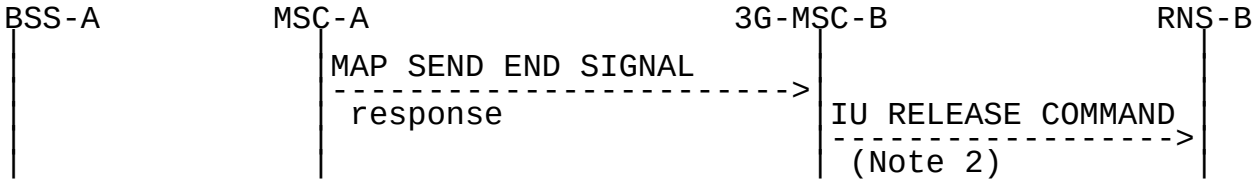


Figure 41: Signalling for Basic Inter-MSC Handover completion (Positive outcome)

Negative outcome:

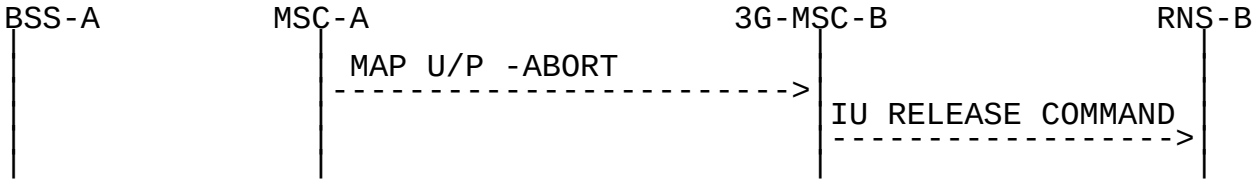


Figure 42: Signalling for Basic Inter-MSC Handover completion (Negative outcome)

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

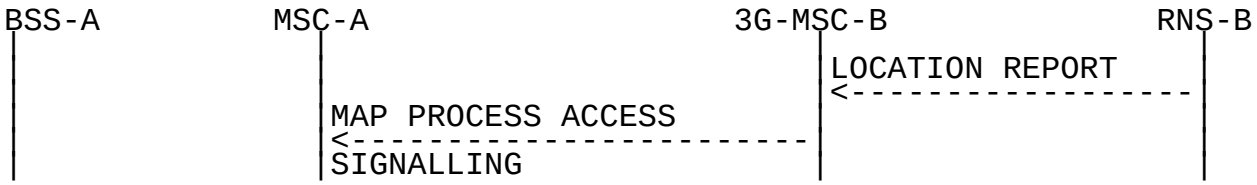


Figure 42a: Signalling for updating of anchor MSC after change of location in RNS

The handover procedure is normally triggered by BSS-A by sending a HANDOVER 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 HANDOVER REQUIRED message. The identity of the target RNC where the call is to be handed over in 3G_MSC-B area, provided in the HANDOVER REQUIRED message in the information element Cell Identifier List (Preferred), is mapped to the target RNC Id MAP parameter and the HANDOVER 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 HANDOVER REQUEST message. Note: UMTS supports only CN initiated tracing.

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

	408.008	—	29.002	Notes
Forward message	HANDOVER REQUIRED BSSMAP information elements	MAP PREPARE HANDOVER request -ho-NumberNotRequired -target RNC Id -IMSI -Integrity protection info -Encryption info -an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE)		1 2 3 4
Positive result		MAP PREPARE HANDOVER response -handover number -an-APDU(HANDOVER REQUEST ACKNOWLEDGE or HANDOVER FAILURE)		5
Negative result	HANDOVER REQUIRED REJECT equipment failure equipment failure equipment failure equipment failure equipment failure equipment failure	MAP PREPARE HANDOVER System Failure No Handover Number available UnexpectedDataValue Data Missing MAP CLOSE MAP U/P -ABORT		6

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~~ ~~40~~8.008.

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:

	29.002	25.413	Notes
Forward message	MAP PREPARE HANDOVER request -ho-NumberNotRequired -target RNC Id -IMSI -Integrity protection info -Encryption info -RANAP service handover -an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE)	RELOCATION REQUEST	1
	BSSMAP information elements: Channel Type Cause sRNC to tRNC container SNA Access Information	RANAP information elements: RAB parameters Cause sRNC to tRNC container SNA Access Information	2
		info stored/generated in/by 3G_MSC-B: CN domain indicator	
Positive result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER REQUEST ACK)	RELOCATION REQUEST ACK	
	BSSMAP information elements: Layer 3 info	RANAP information elements: tRNC to sRNC container	
Negative result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER FAILURE)	RELOCATION FAILURE	

NOTE 1: Integrity protection information, encryption information, IMSI and RANAP service handover 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 2: SNA Access Information parameter is included by MSC-A, only when the MSC-A uses 29.002 as per release 5. These IEs are not included if the MSC-A is release 4 or earlier.

The interworking between Send End Signal and RELOCATION COMPLETE in 3G_MSC-B is as follows:

	25.413	29.002	Notes
Forward message	RELOCATION COMPLETE	MAP SEND END SIGNAL request -an-APDU(HANDOVER COMPLETE)	
Positive result	IU RELEASE COMMAND -Normal release	MAP SEND END SIGNAL response	1
Negative result	IU RELEASE COMMAND -Normal release -Normal release	MAP CLOSE MAP U/P -ABORT	2

NOTE 1: The positive empty result triggers the clearing of the Radio Resources on the Iu-Interface and the release of the SCCP connection between 3G_MSC-B and RNS-B. If a circuit connection is used between MSC-A and 3G_MSC-B, the 'Normal release' clearing cause shall only be given to RNS-B when 3G_MSC-B has received a clearing indication on its circuit connection with MSC-A.

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	08.08	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:

	~~40~~8.~~0~~08	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 -an-APDU(ASSIGNMENT REQUEST) BSSMAP information elements: Channel Type	RAB ASSIGNMENT REQ Service handover 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 Handover Request BSSMAP 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 request MAP message.

****** END OF MODIFICATIONS ******

3GPP TSG CN WG4 Meeting #15 ***N4-021102***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

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 **X**

Title:	⌘	Support for Shared Network in connected mode
Source:	⌘	Ericsson
Work item code:	⌘	TEI5
Date:	⌘	09/07/2002
Category:	⌘	**B**
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:	⌘	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 Informationof 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

		Y	N			
Other specs	⌘	X		Other core specifications	⌘	29.010 CR 058 23.003 CR 050 23.009 CR 080
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
Additional SM Delivery Outcome	7.6.8.11
Age Indicator	7.6.3.72
Alert Reason	7.6.8.8
Alert Reason Indicator	7.6.8.10
Alerting Pattern	7.6.3.44
All GPRS Data	7.6.3.53
All Information Sent	7.6.1.5
AN-apdu	7.6.9.1
APN	7.6.2.42
Authentication set list	7.6.7.1
B-subscriber Address	7.6.2.36
B subscriber Number	7.6.2.48
B subscriber subaddress	7.6.2.49
Basic Service Group	7.6.4.40
Bearer service	7.6.4.38
BSSMAP Service Handover	7.6.6.5
Call Barring Data	7.6.3.83
Call barring feature	7.6.4.19
Call barring information	7.6.4.18
Call Direction	7.6.5.8
Call Forwarding Data	7.6.3.84
Call Info	7.6.9.9
Call reference	7.6.5.1
Call Termination Indicator	7.6.3.67
Called number	7.6.2.24
Calling number	7.6.2.25
CAMEL Subscription Info	7.6.3.78
CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Location Information for GPRS	7.6.2.30a
Location update type	7.6.9.6
Long Forwarded-to Number	7.6.2.22A
Long FTN Supported	7.6.2.22B
Lower Layer Compatibility	7.6.3.42
LSA Information	7.6.3.56
LSA Information Withdraw	7.6.3.58
MC Information	7.6.4.48
MC Subscription Data	7.6.4.47
Mobile Not Reachable Reason	7.6.3.51
Modification request for CSI	7.6.3.81
Modification request for SS Information	7.6.3.82
More Messages To Send	7.6.8.7
MS ISDN	7.6.2.17
MSC number	7.6.2.11
MSIsdn-Alert	7.6.2.29
Multicall Bearer Information	7.6.2.52
Multiple Bearer Requested	7.6.2.53
Multiple Bearer Not Supported	7.6.2.54
MWD status	7.6.8.3
NbrUser	7.6.4.45
Network Access Mode	7.6.3.50
Network node number	7.6.2.43
Network resources	7.6.10.1
Network signal information	7.6.9.8
New password	7.6.4.20
No reply condition timer	7.6.4.7
North American Equal Access preferred Carrier Id	7.6.2.34
Number Portability Status	7.6.5.14
ODB Data	7.6.3.85
ODB General Data	7.6.3.9
ODB HPLMN Specific Data	7.6.3.10
OMC Id	7.6.2.18
Originally dialled number	7.6.2.26
Originating entity number	7.6.2.10
Override Category	7.6.4.4
P-TMSI	7.6.2.47
PDP-Address	7.6.2.45
PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75

Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GGSN address	7.6.2.40
GGSN number	7.6.2.41
GMSC CAMEL Subscription Info	7.6.3.34
GPRS enhancements support indicator	7.6.3.73
GPRS Node Indicator	7.6.8.14
GPRS Subscription Data	7.6.3.46
GPRS Subscription Data Withdraw	7.6.3.45
GPRS Support Indicator	7.6.8.15
Group Id	7.6.2.33
GSM bearer capability	7.6.3.6
gsmSCF Address	7.6.2.58
gsmSCF Initiated Call	7.6.3.c
Guidance information	7.6.4.22
Handover number	7.6.2.21
High Layer Compatibility	7.6.3.43
HLR Id	7.6.2.15
HLR number	7.6.2.13
HO-Number Not Required	7.6.6.7
IMEI	7.6.2.3
IMSI	7.6.2.1
Integrity Protection Information	7.6.6.8
Inter CUG options	7.6.3.27
Intra CUG restrictions	7.6.3.28
SGSN number	7.6.2.38
SNA Access Information	7.6.6.4
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
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

****** 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(=)		
SNA Access Information	C	C(=)		
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 2 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                         ISDN-AddressString,
     rab-Id                                 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 ******

3GPP TSG CN WG4 Meeting #15 ***N4-021103***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

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 **X**

Title:	⌘	Support for Shared Network in connected mode
Source:	⌘	Ericsson
Work item code:	⌘	TEI5
Date:	⌘	09/07/2002
Category:	⌘	**B**
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:	⌘	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:	⌘	

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

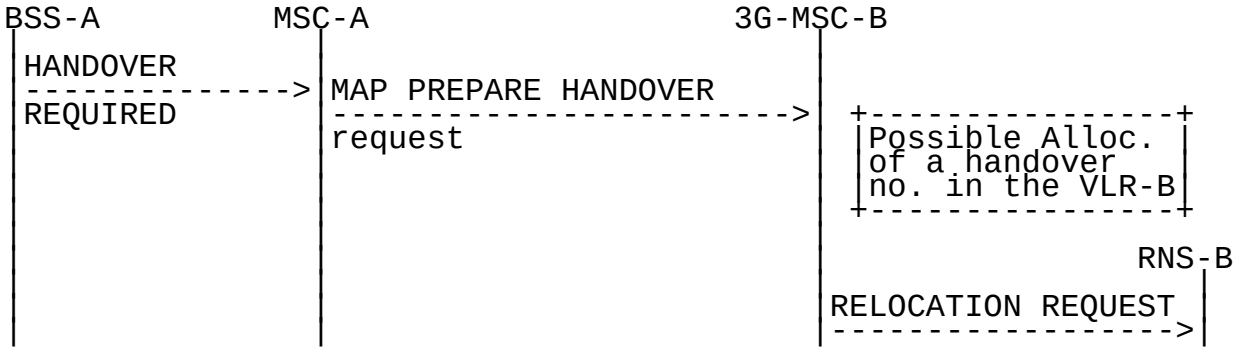


Figure 37a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)

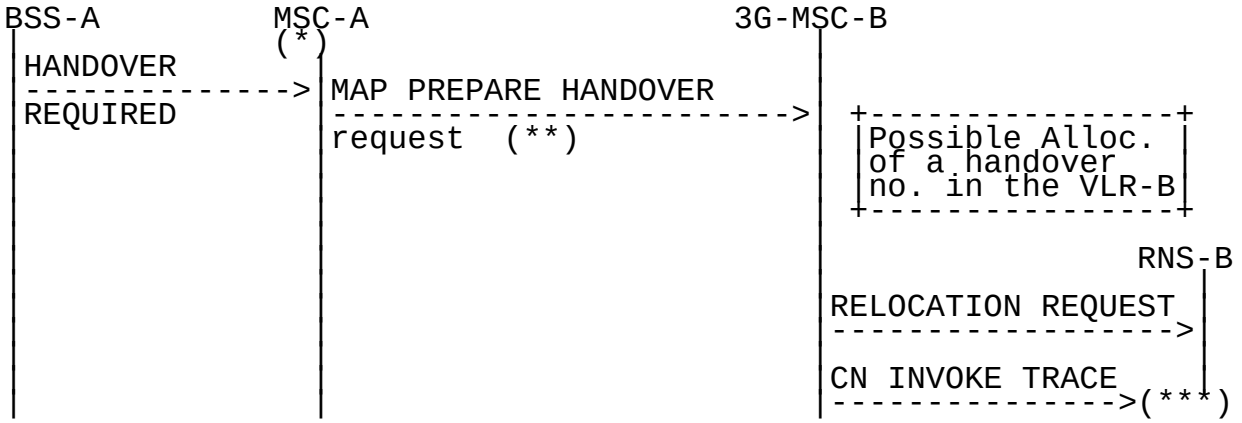


Figure 37b: Signalling for Basic Inter-MSC Handover initiation (CN invoke trace message transferred)

(*): Tracing invocation has been received from VLR.

(**): In that case, HANDOVER 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):

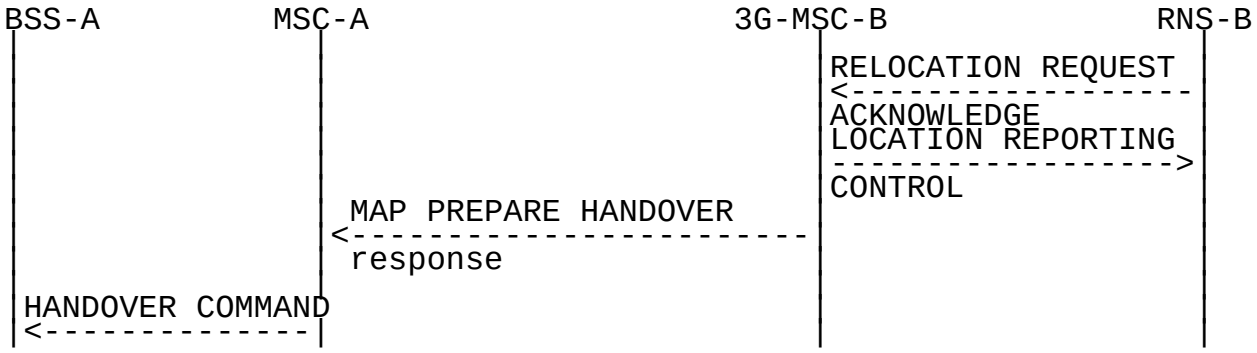
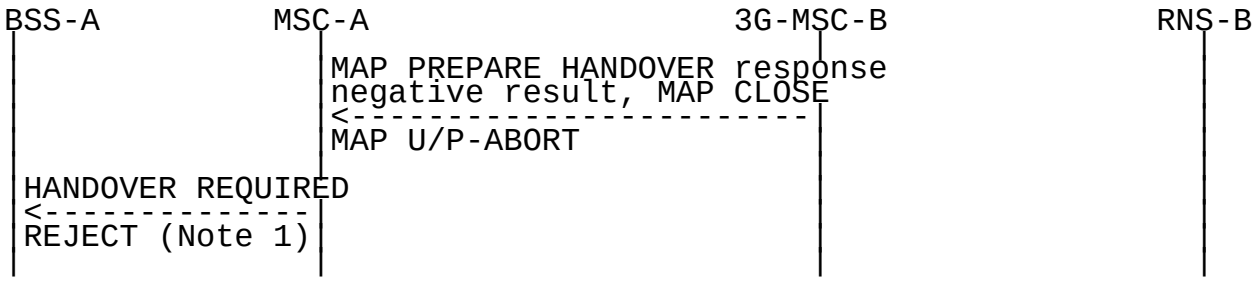


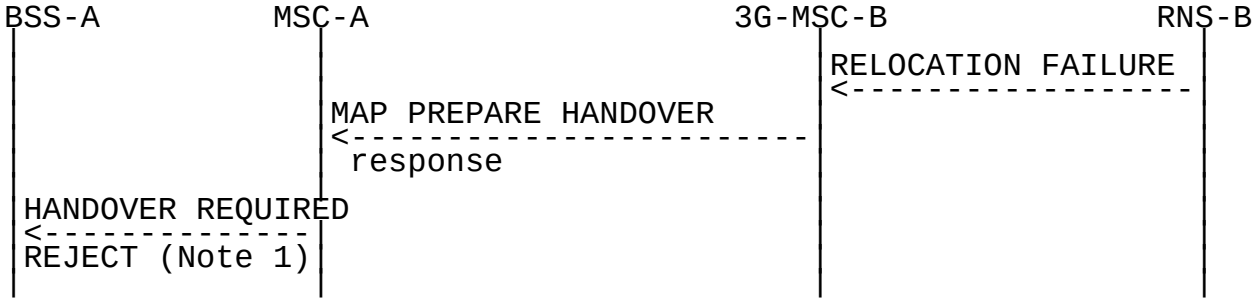
Figure 38: Signalling for Basic Inter-MSC Handover execution (Positive outcome)

Possible Negative outcomes:

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



b) radio resources allocation failure:



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

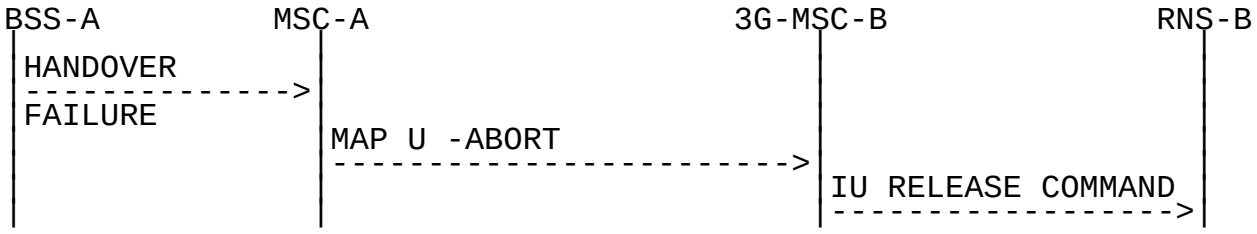


Figure 39: Signalling for Basic Inter-MSC Handover execution (Negative outcomes)

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

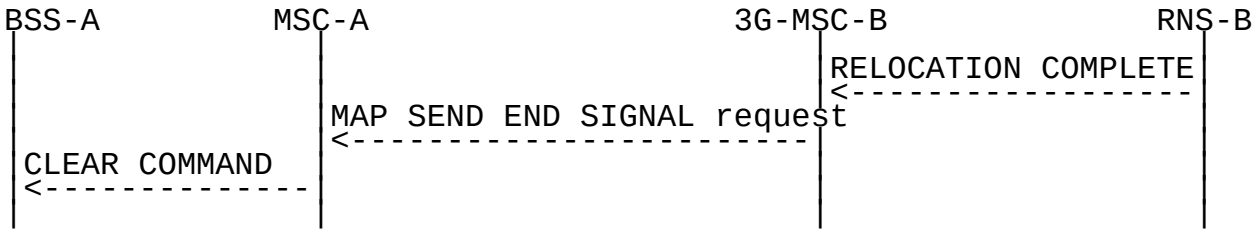


Figure 40: Signalling for Basic Inter-MSC Handover completion

Positive outcome:

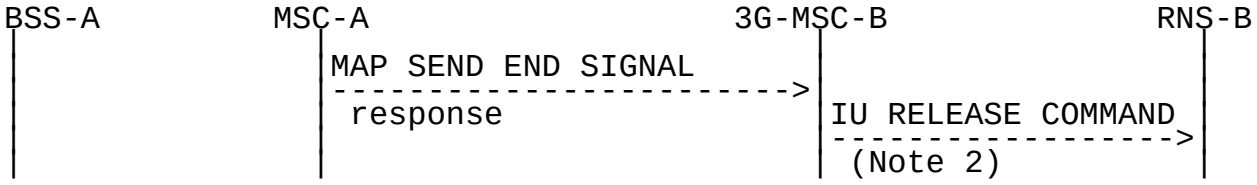


Figure 41: Signalling for Basic Inter-MSC Handover completion (Positive outcome)

Negative outcome:

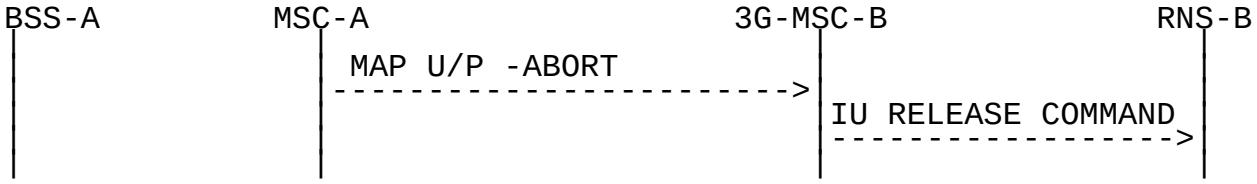


Figure 42: Signalling for Basic Inter-MSC Handover completion (Negative outcome)

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

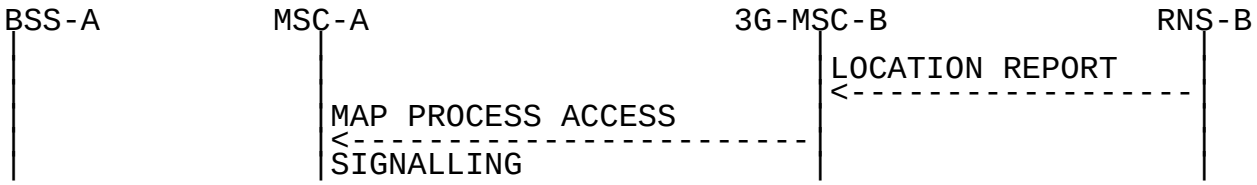


Figure 42a: Signalling for updating of anchor MSC after change of location in RNS

The handover procedure is normally triggered by BSS-A by sending a HANDOVER 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 HANDOVER REQUIRED message. The identity of the target RNC where the call is to be handed over in 3G_MSC-B area, provided in the HANDOVER REQUIRED message in the information element Cell Identifier List (Preferred), is mapped to the target RNC Id MAP parameter and the HANDOVER 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 HANDOVER REQUEST message. Note: UMTS supports only CN initiated tracing.

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

	048.008	29.002	Notes
Forward message	HANDOVER REQUIRED BSSMAP information elements	MAP PREPARE HANDOVER request -ho-NumberNotRequired -target RNC Id -IMSI -Integrity protection info -Encryption info -an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE)	1 2 3 4
Positive result		MAP PREPARE HANDOVER response -handover number -an-APDU(HANDOVER REQUEST ACKNOWLEDGE or HANDOVER FAILURE)	5
Negative result	HANDOVER REQUIRED REJECT equipment failure equipment failure equipment failure equipment failure equipment failure equipment failure	MAP PREPARE HANDOVER System Failure No Handover Number available UnexpectedDataValue Data Missing MAP CLOSE MAP U/P -ABORT	6

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 04~~8.0~~0~~8.

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:

	29.002	25.413	Notes
Forward message	MAP PREPARE HANDOVER request -ho-NumberNotRequired -target RNC Id -IMSI -Integrity protection info -Encryption info -RANAP service handover -SNA Access Information ~~SNA Access Information~~ -an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE) BSSMAP information elements: Channel Type Cause sRNC to tRNC container	RELOCATION REQUEST RANAP information elements: RAB parameters Cause sRNC to tRNC container info stored/generated in/by 3G_MSC-B: CN domain indicator SNA Access Information	1 2
Positive result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER REQUEST ACK) BSSMAP information elements: Layer 3 info	RELOCATION REQUEST ACK RANAP information elements: tRNC to sRNC container	
Negative result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER FAILURE)	RELOCATION FAILURE	

NOTE 1: Integrity protection information, encryption information, IMSI and RANAP service handover 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 2: SNA Access Information parameter is included by MSC-A, only when the MSC-A uses 29.002 as per release 5. These IEs are not included if the MSC-A is release 4 or earlier.

The interworking between Send End Signal and RELOCATION COMPLETE in 3G_MSC-B is as follows:

	25.413	29.002	Notes
Forward message	RELOCATION COMPLETE	MAP SEND END SIGNAL request -an-APDU(HANDOVER COMPLETE)	
Positive result	IU RELEASE COMMAND -Normal release	MAP SEND END SIGNAL response	1
Negative result	IU RELEASE COMMAND -Normal release -Normal release	MAP CLOSE MAP U/P -ABORT	2

NOTE 1: The positive empty result triggers the clearing of the Radio Resources on the Iu-Interface and the release of the SCCP connection between 3G_MSC-B and RNS-B. If a circuit connection is used between MSC-A and 3G_MSC-B, the 'Normal release' clearing cause shall only be given to RNS-B when 3G_MSC-B has received a clearing indication on its circuit connection with MSC-A.

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	~~0~~4~~0~~8.~~0~~08	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:

	~~08.08~~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 -an-APDU(ASSIGNMENT REQUEST) BSSMAP information elements: Channel Type	RAB ASSIGNMENT REQ Service handover SNA Access Information 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 ******

3GPP TSG-CN4 Meeting #15 ***Tdoc N4-021082***
Helsinki, Finland, 29 July – 2 August

3GPP TSG-CN1 Meeting #25 ***Tdoc N1-021789***
Helsinki, Finland, 29 July – 2 August ~~*Tdoc N1-021535*~~

CR-Form-v7

CHANGE REQUEST

⌘ **23.009** **CR** **080** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Support for Shared Network Area
Source:	⌘	Ericsson
Work item code:	⌘	TEI5
Date:	⌘	2002-07-30
Category:	⌘	**B**
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:	⌘	RAN WG3 #30 agreed on a final solution for the support of Shared Networks in connected mode in Release 5. Please see LS N1-021535 and the TR R3:012 included. The agreed solution is based on the concept of SNA which is basically a collection of Location Areas. A set of allowed SNAs is associated to each IMSI serie. The set of allowed SNAs, the Shared Network Area (SNA) information is signalled to the radio access network at the call set up to allow the radio access network decide which Location Area the subscriber may be handed over to at a later point.
Summary of change:	⌘	SNA information resides in the CN and is transferred to the radio access network via the Iu interface where it is used for selection of the target cell for handover. During the inter-MSC handover, the SNA information is sent from the anchor to the non-anchor and passed to the radio access network by the non-anchor. For emergency calls, SNA information does not apply. This CR specifies handling of the SNA information with respect to the handover/relocation.
Consequences if not approved:	⌘	Correct target for handover could not be selected for Shared Networks.

Clauses affected:	⌘	3.1, 4.3.1, 4.4.1

		Y	N			
Other specs	⌘	**X**		Other core specifications	⌘	22.129, 25.413, 25.401, 25.423, 29.002, 23.003, 29.010
affected:				Test specifications		
				O&M Specifications		

Other comments:	⌘	This CR was once presented at CN1#24 (N1-021430) for conditional approval. Since RAN WG3 could not reach to an agreement by the end of the CN1 meeting, the CR was withdrawn. In this revision the terminology is aligned with those used in other specifications, i.e. “SNA” is used instead of “access rights”. Reference to TS 25.401 where SNA is briefly described is also added.

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 MODIFICATION **********

2 References

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

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

[1] ITU-T Recommendation Q.118: "Abnormal conditions - Special release arrangements".

[2] 3GPP TS 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2a] 3GPP TS 21.905: "3G Vocabulary".

[3] 3GPP TS 03.68: "Digital cellular telecommunications system (Phase 2+); Voice Group Call Service (VGCS); Stage 2".

[4] 3GPP TS 05.08: "Digital cellular telecommunications system (Phase 2+); Radio Subsystem Link Control".

[5] 3GPP TS 48.008: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC-BSS) Interface Layer 3 specification".

[6] 3GPP TS 08.58: "Digital cellular telecommunications system (Phase 2+); Base Station Controler - Base Transceiver Station (BSC-BTS) Interface Layer 3 specification".

[7] 3GPP TS 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".

[8] 3GPP TS 29.010: "Information Element Mapping between Mobile Station - Base Station System (MS-BSS) and Base Station System - Mobile-services Switching Centre (BSS-MSC); Signalling procedures and the Mobile Application Part (MAP)".

[9] 3GPP TS 22.129: "Handover Requirements between UMTS and GSM or other Radio Systems".

[10] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[11] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[12] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[13] 3GPP TS 25.303: "UE functions and inter-layer procedures in connected mode".

[14] 3GPP TS 25.331: "Radio Resource Control (RRC) Protocol Specification".

[15] 3GPP TS 29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface".

[16] ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".

[17] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[18] 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes".

[19] 3GPP TS 23.221: "Architectural Requirements".

[20] 3GPP TS 25.401: "UTRAN Overall Description".

********** NEXT MODIFICATION **********

3.1 Abbreviations

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

3G_MSC	A third generation MSC that supports the Iu interface and optionally the A interface
3G_MSC-A	The controlling 3G_MSC on which the call was originally established
3G_MSC-B	The 3G_MSC to which the UE is handed over in a Basic Handover
3G_MSC-B'	The 3G_MSC to which the UE is handed over in a Subsequent Handover
BSC	Base Station Controller
BSS	Base Station System
BSS-A	The BSS from which the MS is being handed over
BSS-B	The BSS to which the MS is being handed over
BTS	Base Transceiver Station
GERAN	GSM EDGE Radio Access Network
ISC	International Switching Centre
MS	Mobile Station
MSC	A second generation Mobile Services Switching Centre that only supports the A interface
MSC-A	The controlling MSC on which the call was originally established
MSC-B	The MSC to which the MS is handed over in a Basic Handover
MSC-B'	The MSC to which the MS is handed over in a Subsequent Handover
RNC	Radio Network Controller
RNS	Radio Network Subsystem
SBSS	Serving BSS
SNA	Shared Network Area
SRNS	Serving RNS
UE	A User Equipment is a terminal that supports USIM and the UMTS Uu interface
UE/MS	A terminal that supports USIM, SIM, the Uu interface and the Um interface
USIM	UMTS Subscriber Identity Module

Other abbreviations used in the GSM specifications are listed in 3GPP TS 01.04 [2] and 3GPP TS 21.905[2a].

********** NEXT MODIFICATION **********

4.3.1 Role of 3G_MSC-A

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-A (simply termed 3G_MSC) controls the call, the mobility management and the radio resources before, during and after an Intra-3G_MSC handover/relocation. When RANAP or BSSMAP procedures have to be performed, they are initiated and driven by 3G_MSC-A.

In a network implementing the "Flexible Iu interface for handover/relocation" option, 3G_MSC-A may optionally use a global title based on the Global RNC-Id for the addressing of the Iu interface messages towards the target RNC.

For handover/relocation to an area where "Intra Domain Connection of RAN Nodes to Multiple CN Nodes" is applied, 3G_MSC-A can have multiple target CN nodes for each handover/relocation target in a pool-area as specified in 3GPP TS 23.236 [18].

In the case of intra-MSC handover of a speech call, 3G_MSC-A controls the transcoder in the core network. The 3G_MSC-A determines if a transcoder is required to be inserted or released in the CN.

In the case of Inter-3G_MSC relocation, 3G_MSC-A links out the transcoder.

In the Inter-3G_MSC relocation case, 3G_MSC-A is the 3G_MSC that controls the call and the mobility management of the UE during the call, before, during and after a basic or subsequent relocation. When RANAP procedures related to dedicated resources have to be performed towards the UE, they are initiated and driven by 3G_MSC-A. The 3G_MSC-A - 3G_MSC-B interface works as a 3G_MSC - RNS interface for the RANAP procedures. The Direct Transfer signalling is relayed transparently by 3G_MSC-B between 3G_MSC-A and the UE.

During a successful relocation the order to perform location reporting at change of Service Area is not transferred to the target RNS. In the Intra-3G_MSC-A relocation case, the 3G_MSC-A re-issues the Location Reporting Control towards the target RNS. In the Inter-3G_MSC relocation case, 3G_MSC-A keeps the control of the Location Report Control procedure. However, re-issuing the Iu-LOCATION-REPORTING-CONTROL messages due to subsequent Intra-3G_MSC-B relocations is the responsibility of 3G_MSC-B.

During a basic relocation, 3G_MSC-A initiates and controls all the relocation procedure, from its initiation (reception of Relocation Required from RNS-A on Iu-interface) until its completion (reception of Relocation Complete from 3G_MSC-B on E-interface).

During a subsequent relocation back to 3G_MSC-A, 3G_MSC-A acts as an RNS towards 3G_MSC-B, which controls the relocation procedure until the termination in 3G_MSC-A of the handover radio resources allocation (sending of the Relocation Request Acknowledge to 3G_MSC-B from 3G_MSC-A). Then all relocation related messages shall terminate at 3G_MSC-A (e.g. Relocation Detect/Complete from RNS-B, Relocation Cancel from RNS-A).

During a subsequent relocation to a third 3G_MSC, 3G_MSC-A works towards 3G_MSC-B' as described above in the basic relocation paragraph and towards 3G_MSC-B as described above in subsequent relocation paragraph.

In the Inter-System, inter-3G_MSC handover case, 3G_MSC-A is the 3G_MSC which controls the call and the mobility management of the UE/MS during the call, before, during and after a basic or subsequent inter-system handover. When BSSAP procedures related to dedicated resources have to be performed towards the UE/MS, they are initiated and driven by 3G_MSC-A. The 3G_MSC-A – MSC-B interface works as a 3G_MSC – BSS interface for a subset of BSSMAP procedures. These BSSMAP procedures described in 3GPP TS 09 08 [7] are those related to dedicated resources. The DTAP signalling is relayed transparently by MSC-B between 3G_MSC-A and the UE/MS.

During a basic inter-system UMTS to GSM handover, 3G_MSC-A initiates and controls all the handover procedure, from its initiation (reception of Relocation Required from RNS-A on Iu-interface) until its completion (reception of Handover Complete from MSC-B on E-interface).

During a subsequent inter-system UMTS to GSM handover back to 3G_MSC-A, 3G_MSC-A acts as a BSS towards 3G_MSC-B, which controls the handover procedure until the termination in 3G_MSC-A of the handover radio resources allocation (sending of the Handover Request Acknowledge to 3G_MSC-B from 3G_MSC-A). Then all handover related messages shall terminate at 3G_MSC-A (e.g. Handover Detect/Complete from BSS-B, Relocation Cancel from RNS-A).

During a subsequent inter-system UMTS to GSM handover to a third 3G_MSC, 3G_MSC-A works towards MSC-B' as described above in the basic inter-system handover paragraph and towards 3G_MSC-B as described above in subsequent inter-system handover paragraph.

During a basic inter-system GSM to UMTS handover, 3G_MSC-A initiates and controls all the handover procedure, from its initiation (reception of Handover Required from BSS-A on A-interface) until its completion (reception of Handover Complete from 3G_MSC-B on E-interface).

During a subsequent inter-system GSM to UMTS handover back to 3G_MSC-A, 3G_MSC-A acts as an RNS towards MSC-B, which controls the handover procedure until the termination in 3G_MSC-A of the handover radio resources allocation (sending of the Handover Request Acknowledge to MSC-B from 3G_MSC-A). Then all handover related messages shall terminate at 3G_MSC-A (e.g. Relocation Detect/Complete from RNS-B, Handover Failure from BSS-A).

During a subsequent inter-system GSM to UMTS handover to a third 3G_MSC, 3G_MSC-A works towards 3G_MSC-B' as described above in the basic inter-system handover paragraph and towards MSC-B as described above in subsequent inter-system handover paragraph.

3G_MSC-A may assign a priority level defined as RAB parameter in 3GPP TS 25.413 [11] for each bearer. In case of relocation of a multicall configuration the 3G_MSC-B or the target RNC shall select the bearers to be handed over according to the priority level, if the target cell is not able to accommodate all bearers. If a selection has to be made between bearers of the same priority level, then the selection criteria are implementation dependent.

For network sharing (see 3GPP TS 25.401 [20], subclause 7.2.3) 3G MSC-A shall send the SNA information to 3G_MSC-B except for emergency calls.

If 3G_MSC-A supports the optional supplementary service Multicall (See 3GPP TS 23.135) and UE is engaged with multiple bearers the following description applies:

- In the Intra-3G_MSC relocation case, the 3G-MSC-A tries to relocate all bearers to a new RNS.
- In the basic relocation case, the 3G-MSC-A tries to relocate all bearers to 3G_MSC-B. If 3G_MSC-A receives an indication that the 3G_MSC-B does not support multiple bearers, then 3G_MSC-A shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries again to relocate the selected bearer.
- In the subsequent relocation to a third 3G_MSC-B' case, the 3G-MSC-A tries to relocate all bearers to 3G_MSC-B'. If 3G_MSC-A receives an indication that the 3G_MSC-B' does not support multiple bearers, then 3G_MSC-A shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries again to relocate the selected bearer.
- In the Intra-3G_MSC inter-system UMTS to GSM handover case and the basic inter-system UMTS to GSM handover case, the 3G_MSC-A shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries to handover the selected bearer.
- In all cases described above, 3G_MSC-A shall release some calls which has been carried by the bearers failed to set up in new RNS or the bearers not to be handed over.

********** NEXT MODIFICATION **********

4.4.1 Role of 3G_MSC-B

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-B keeps the control of the whole Intra-3G_MSC handover/relocation procedure. 3G_MSC-B notifies MSC-A or 3G_MSC-A of intra-3G_MSC-B InterSystem handover and intra GSM handovers, by using the A-HANDOVER-PERFORMED message.

In case of intra-3G_MSC-B SRNS relocation, if security algorithms have been changed:

a) When encapsulated BSSAP is used on the E interface, the A-HANDOVER-PERFORMED message shall be sent.

b) When encapsulated RANAP is used on the E interface, the Iu-LOCATION-REPORT message shall be sent.

On reception of an order to perform location reporting at change of Service Area from 3G_MSC-A, 3G_MSC-B shall be responsible to re-issue the Iu-LOCATION-REPORTING-CONTROL message after subsequent Intra-3G_MSC-B relocations/handovers. This shall be performed immediately after the successful completion of the Relocation Resource Allocation procedure.

In both cases, the selected UMTS algorithm(s) shall be indicated in the MAP-PROCESS-ACCESS-SIGNALLING request.

In a network implementing the "Flexible Iu interface for handover/relocation" option, in the Intra-3G_MSC handover/relocation case, 3G_MSC-B may optionally use a global title based on the Global RNC-Id for the addressing of the Iu interface messages towards the target RNC.

For subsequent inter-MSC handover/relocation to an area where "Intra Domain Connection of RAN Nodes to Multiple CN Nodes" is applied, 3G_MSC-B can have multiple target CN nodes for each handover target in a pool-area as specified in 3GPP TS 23.236 [18].

The role of 3G_MSC-B is also to provide transcoder resources.

In the Inter-3G_MSC relocation case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards RNS-B. 3G_MSC-B will do some processing on the RANAP information received on the E-interface or the RANAP information received on the Iu-interface whereas it will relay the Direct Transfer information transparently between Iu-interface and E-interface. 3G_MSC-A initiates and drives RANAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its RNSs to the extent that 3G_MSC-B is responsible for the connections of its RNSs. The release of the dedicated resources between 3G_MSC-B and RNS-B is under the responsibility of 3G_MSC-B and RNS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to information received from RNS-B, 3G_MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with RNS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with 3G_MSC-A, if any. In the same way, the release of the connection to its RNS-B, is initiated by 3G_MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with 3G_MSC-A, if any, or when the dialogue with the 3G_MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with 3G_MSC-A then 3G_MSC-B shall release the circuit connection.

In the Inter-system UMTS to GSM Inter-3G_MSC handover case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards BSS-B. 3G_MSC-B will do some processing on the BSSMAP information received on the E-interface or the BSSMAP information received on the A-interface whereas it will relay the DTAP information transparently between A-interface and E-interface. 3G_MSC-A initiates and drives a subset of BSSMAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its BSSs to the extent that 3G_MSC-B is responsible for the connections of its BSSs. The release of the dedicated resources between 3G_MSC-B and BSS-B is under the responsibility of 3G_MSC-B and BSS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to information received from BSS-B, 3G_MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with BSS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its BSS-B, is initiated by 3G_MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with 3G_MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with 3G_MSC-A then 3G_MSC-B shall release the circuit connection.

In the Inter-system GSM to UMTS Inter-3G_MSC handover case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards RNS-B. 3G_MSC-B will do some processing on the BSSMAP information received on the E-interface or the RANAP information received on the Iu-interface whereas it will relay the Direct Transfer information transparently between Iu-interface and E-interface. MSC-A initiates and drives a subset of BSSMAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its RNSs to the extent that 3G_MSC-B is responsible for the connections of its RNSs. The release of the dedicated resources between 3G_MSC-B and RNS-B is under the responsibility of 3G_MSC-B and RNS-B, and is not directly controlled by MSC-A. When clearing is to be performed due to information received from RNS-B, 3G_MSC-B shall transfer this clearing indication to MSC-A, to clear its connection with RNS-B, to terminate the dialogue with MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its RNS-B, is initiated by 3G_MSC-B, when the dialogue with MSC-A ends normally and a release is received from the circuit connection with MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with MSC-A then 3G_MSC-B shall release the circuit connection.

At intra-PLMN handover/relocation, 3G_MSC-B shall send Service Handover related information to the BSC/RNC if and only if this Service Handover information is received from 3G_MSC-A. 3G_MSC-B shall not modify Service Handover related information received from a 3G_MSC-A within the same PLMN.

For network sharing (see 3GPP TS 25.401 [20], subclause 7.2.3) when SNA information is received by 3G_MSC-B from 3G_MSC-A, 3G MSC-B shall send the SNA information to the RNS.

If 3G_MSC-B does not support the optional supplementary service Mutlicall (see 3GPP TS 23.135) and 3G_MSC-A requests to relocate multiple bearers, 3G_MSC-B shall indicate that it does not support multiple bearers to 3G_MSC-A.

If 3G_MSC-B supports the optional supplementary service Multicall (see 3GPP TS 23.135) and UE is engaged with multiple bearers the following description applies:

- In the basic relocation case, the 3G_MSC-B shall be able to allocate a Handover Number for each bearer. The 3G_MSC-B shall also be able to select some bearers to be handed over according to the priority level defined as RAB parameters in 3GPP TS 25.413 [11] so that the number of bearers will fulfill the maximum number of bearers supported by the 3G_MSC-B. If a selection has to be made between bearers of the same priority level, then the selection criteria are implementation dependent.

- In the Intra-3G_MSC relocation case, the 3G_MSC-B tries to relocate all bearers to a new RNS.

- In the subsequent relocation back to the 3G_MSC-A or to a third 3G_MSC-B' case, the 3G_MSC-B tries to request to the 3G_MSC-A to relocate all bearers to the 3G_MSC-A or to the 3G_MSC-B'.

- In the Intra-3G_MSC inter-system UMTS to GSM handover case and the subsequent inter-system UMTS to GSM handover back to the 3G_MSC-A or to a third MSC-B' case, the 3G_MSC-B shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries to handover the selected bearer.

3GPP TSG CN WG4 Meeting #15 **N4-021101**
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **23.003** **CR** **050** ⌘ **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 ☒

Title:	⌘	Support for Shared Network in connected mode: definition of SNA
Source:	⌘	Ericsson
Work item code:	⌘	TEI5
Date:	⌘	09/07/2002
Category:	⌘	**B**
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:	⌘	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.
Summary of change:	⌘	The concept and format of Shared Network Area is defined
Consequences if not approved:	⌘	The concept of SNA would be used in other TS's without a proper defintion

Clauses affected:	⌘	12, 12.6

Y N

Other specs	⌘	**X**	Other core specifications	⌘	29.002 CR 466 29.010 CR 058 23.009 CR 080
affected:		**X**	Test specifications		
		X	O&M Specifications		
Other comments:	⌘	The notation for the concatenation operator has been changed throughout section 12 from “+” to “||”			

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 ******

12 Identification of PLMN, RNC, Service Area, CN domain, Shared Network Area

The following clauses describe identifiers that are used by both CN and UTRAN across the Iu interface. For identifiers that are solely used within UTRAN, see 3GPP TS 25.401.

NOTE: in the following, the double vertical bar notation || indicates the concatenation operator.

12.1 PLMN Identifier

A Public Land Mobile Network is uniquely identified by its PLMN identifier. PLMN-Id is made of Mobile Country Code (MCC) and Mobile Network Code (MNC).

- **PLMN-Id = MCC || MNC**

The MCC and MNC are predefined within a UTRAN, and set in the RNC via O&M.

12.2 CN Domain Identifier

A CN Domain Edge Node is identified within UTRAN by its CN Domain Identifier. The CN Domain identifier is used over UTRAN interfaces to identify a particular CN Domain Edge Node for relocation purposes. The CN Domain identifier for Circuit Switching (CS) is made of the PLMN-Id and the LAC, whereas for Packet Switching (PS) it is made of the PLMN-Id, the LAC, and the RAC of the first accessed cell in the target RNS.

The two following CN Domains Identifiers are defined:

- **CN CS Domain-Id = PLMN-Id || LAC**
- **CN PS Domain-Id = PLMN-Id || LAC || RAC**

The LAC and RAC are defined by the operator, and set in the RNC via O&M.

For syntax description and the usage of this identifier in RANAP signalling, see 3GPP TS 25.413.

12.3 CN Identifier

A CN node is uniquely identified within a PLMN by its CN Identifier (CN-Id). CN-Id together with the PLMN identifier is used to globally identify the CN node. CN-Id together with the PLMN-Id is used as CN node identifier in RANAP signalling over the Iu interface.

Global CN-Id = PLMN-Id || CN-Id

The CN-Id is defined by the operator, and set in the nodes via O&M.

For syntax description and the usage of this identifier in RANAP signalling, see 3GPP TS 25.413.

12.4 RNC Identifier

An RNC node is uniquely identified within UTRAN by its RNC Identifier (RNC-Id). RNC-Id together with the PLMN identifier is used to globally identify the RNC. RNC-Id or the RNC-Id together with the PLMN-Id is used as RNC

identifier in UTRAN Iub, Iur and Iu interfaces. SRNC-Id is the RNC-Id of the SRNC. C-RNC-Id is the RNC-Id of the controlling RNC. D-RNC-Id is the RNC Id of the drift RNC.

- **Global RNC-Id = PLMN-Id ~~|~~|+ RNC-Id**

The RNC-Id is defined by the operator, and set in the RNC via O&M

For syntax description and the usage of this identifier in RANAP signalling, see 3GPP TS 25.413.

12.5 Service Area Identifier

The Service Area Identifier (SAI) is used to identify an area consisting of one or more cells belonging to the same Location Area. Such an area is called a Service Area and can be used for indicating the location of a UE to the CN.

The Service Area Code (SAC) together with the PLMN-Id and the LAC will constitute the Service Area Identifier.

- **SAI = PLMN-Id ~~|~~|+ LAC ~~|~~|+ SAC**

The SAC is defined by the operator, and set in the RNC via O&M.

For syntax description and the usage of this identifier in RANAP signalling, see 3GPP TS 25.413. 3GPP TS 25.423 and 3GPP TS 25.419 define the usage of this identifier in RNSAP and SABP signalling.

A cell may belong to one or two Service Areas. In the case that it belongs to two Service Areas, one is applicable in the BC domain and the other is applicable in both the CS and PS domains.

The broadcast (BC) domain requires that Service Area consist of one cell. This does not limit the usage of Service Area for other domains. Refer to 3GPP TS 25.410 for a definition of the BC domain.

12.6 Shared Network Area Identifier

The Shared Network Area Identifier (SNA-Id) is used to identify an area consisting of one or more Location Areas. Such an area is called a Shared Network Area and can be used to grant access rights to parts of a Shared Network to a UE in connected mode (see 3GPP TS 25.401).

The Shared Network Area Identifier consists of the PLMN-Id followed by the Shared Network Area Code (SNAC).

- **SNA-Id = PLMN-Id ~~|~~|+ SNAC**

The SNAC is defined by the operator.

For syntax description and the usage of this identifier in RANAP signalling, see 3GPP TS 25.413.

****** END OF MODIFICATIONS ******

3GPP TSG CN WG4 Meeting #15 ***N4-021097***
Helsinki, Finland, 29 July – 2 August 2002

Title:	LS in reply to the Response to Liaison Statement on Support of IPv6 on Iu
Source:	**CN4**
To:	**SA2**
Cc:	**RAN3**
References:	**S2-022003** Response to Liaison Statement on Support of IPv6 on Iu

Contact Person:

Name:	**Giorgi Gulbani**
Tel. Number:	**+358408492393**
E-mail Address:	**giorgi.gulbani@nokia.com**

1. Description:

CN4 thanks S2 for the Response to Liaison Statement on Support of IPv6 on Iu.

During the discussions related to the LS (S2-022003), CN4 found preferable to transfer user data by GTP on both the Iu interface and the Gn interface with the same IP version, in accordance with S2 guidance.

Subclause 12.7 'Iu Interface (Iu mode)' in the TS 23.060v5.2.0 reads:

> "Two different options exist for the transport of signalling and user data over Iu: the ATM transport option and the IP transport option. The different protocol stacks applicable to the Iu interface are described in 3GPP TS 25.412 for the control plane and 3GPP TS 25.414 for the user plane."

RAN3 decision to mandate IPv6 on all new interfaces in the RAN is reflected in the subclause 6.1.3 'IP Transport Option' in the TS 25.414v5.1.0, which reads:

> "An IP RNC/CN-node shall support IPv6. The support of IPv4 is optional.
> NOTE: This does not preclude single implementation and use of IPv4.
> IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network."

That is, an RNC IP address shall be of IPv6 type, and only optionally of IPv4 type.

Subclause 14.11.1 'GSN Address' in the TS 23.060v5.2.0 reads:

> "Each SGSN and GGSN shall have one or more IP addresses of type IPv4, and optionally of type IPv6, for inter-communication over the backbone network. When an SGSN or a GGSN supports IPv6 in the backbone network, then it shall also support IPv4."

That is, a GSN IP address shall be of IPv4 type, and only optionally of IPv6 type. That obviously is the opposite priority, than an RNC has.

The LS S2-022003) reads:

> "When IPv6 is supported in the backbone network, then IPv4 shall also be supported. The problem and arguments in this respect are equally applicable to the Iu interface where RNCs of different releases, and hence with different IP version capabilities, may have to communicate with each other. As a

consequence, SA2 agreed that when the IP transport option is used on Iu, then IPv4 and IPv6 shall be supported.

Hence, the deployment of IPv6 makes the dual stack support mandatory.

CN4 kindly asks SA2 to confirm the following is current S2 understanding after reading the LS (S2-022003),

1) when ATM transport option is used, V4 is mandatory and V6 shall be optional

2) when IP transport option is used dual stack is mandatory.

2. Actions:

To SA2 group.

CN4 kindly asks SA2 to consider the questions for clarification above, so that we can update GTP specification accordingly to a clearer understanding of S2 views.

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-021090***
Helsinki, Finland, 29th July – 2nd August 2002

Title: LS on Lack of IP "Modify Bearer" procedure

Source: TSG CN4
To: TSG RAN3

Contact Person:
Name: Belling, Thomas
Tel. Number: +49 89 722 47315
E-mail Address: Thomas.Belling@icn.siemens.de

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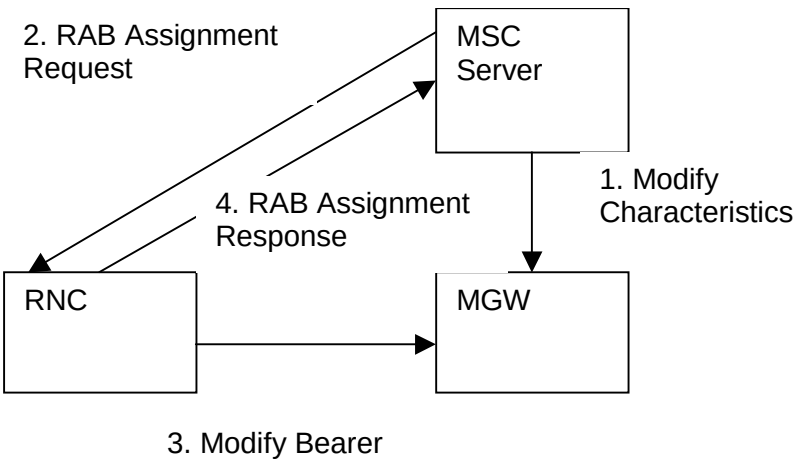
1. Overall Description:

CN4 would like to inform RAN3 that CN4 is currently investigating codec modification and codec re-negotiation procedures. Although the investigations are ongoing, and CRs on TS 23.153 have not yet been agreed upon, CN4 agreed that a "Modify Bearer" procedure is required at the Iu-Cs interface for IP transport to synchronise the switch-over between different codec and/or bearer characteristics during these procedures. Such a Modify Bearer procedure is currently lacking for IP transport. CN4 would therefore like to ask RAN3 to investigate how a "Modify Bearer" procedure, with functionality as detailed below, can be provided.

The "Modify Bearer" procedure is used to synchronise user plane changes, i.e. to indicate if the arriving PDUs transport the new or old payload within IuFP. The RNC and the CN are informed via out-of-band signalling that a change in the payload will occur before they apply the "Modify Bearer" procedure, so a description of the payload may not be signalled within this procedure, but an indication when the payload changes is required. The "Modify Bearer" procedure is not required for IP transport in case of a change between two Iu UP payloads using Iu UP Support Mode, where the Iu UP initialisation provides similar functionality. However, in Rel.5 the "Modify Bearer" procedure is required for a switch-over between UP framing protocol Support Mode and Transparent Mode, as required for UDI fallback. The "Modify Bearer" procedure may also be used for changes between different payloads in Iu UP transparent mode in future releases.
For AAL2 transport, ALCAP signalling provides this functionality.

The agreed callflow is depicted in the figure below:



2. Actions:

To RAN3 group.

ACTION:

CN4 asks RAN3 to investigate how a “Modify Bearer” procedure can be provided for IP transport for the Iu interface starting with Release 5.

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-021071***
Helsinki, Finland, 29th July – 2nd August 2002

Title: Reply LS on Request for clarification related to raised questions regarding "Exchange of addresses on Iu-CS using IP Transport Option in Release 5".

Response to: LS (N4-020801) RAN3 final decision on exchange of addresses on Iu-CS using IP Transport Option in Release 5

Source: CN4

To: RAN3

Cc: CN3

Contact Person:
Name: Juha Kallio
Tel. Number: +358-40-5288457
E-mail Address: juha.kallio@nokia.com

Attachments: N4-020910 Enabling of IP bearer in Iu-cs interface

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1. Overall Description:

CN4 thanks for the liason statement "Response on Liaison Statement on exchange of addresses on Iu-CS using IP Transport Option in Release 5" (see reference above).

Due the fact that CN4 was not involved in detailed technical discussions related to this matter we cannot yet analyse full impacts to all relevant core network specifications.

Following discussions of document N4-020910 (attached) following questions were raised.

It was declared in document that in RANAP RAB ASSIGNMENT RESPONSE it may be possible to receive RNC's IP address and port number by CN. This is new information compared to previous liason statement received from RAN3.

Question 1: Is RNC's IP address and port number always present in RAB ASSIGNMENT RESPONSE message for all modes of Iu user plane (support and transparent)?

Question 2: In support mode case, if the RNC's address and port number is always present in RAB ASSIGNMENT RESPONSE message can it be different from the one received by MGW in IP header (containing RTP packet).

Question 3: Does CN (i.e MGW) needs to check IP source address from every received RTP packet or only from the first received RTP packet (containing Iu INIT)?

Question 4: What RTP payload type shall following connections use:

- Iu in support mode
- Iu in transparent mode

In addition there was concerns raised in CN4 that Iu_cs over IP functionality may not be specified without breaking the fundamental architectural principles of bearer independence in core network.

2. Actions:

To RAN3 group.

ACTION: CN4 asks RAN3 kindly to consider and give response to above questions.

3. Date of Next CN4 Meetings:

CN4#16	23rd – 27th September 2002	Miami, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG-CN-WG4 Meeting #15 ***N4-020910***
Helsinki, Finland, 29th July – 2nd August 2002

Source:	Nokia
Title:	Enabling of IP bearer in Iu-cs interface
Agenda item:	7.5
Document for:	Discussion and Approval

Introduction

RAN3 has asked CN4 to consider modifications in the CN4 specifications according to mechanisms chosen for Iu-cs interface with IP-based bearer. This document shortly describes the needed enhancements in CS core to enable the transport layer address negotiation. The described enhancements cope with both modes of Iu-cs, transparent and support mode.

Technical solution

It is stated in 25.414 version 5.1.0 as follows: "The packet processing function in the CN shall send downstream packets of a given RAB to the RNC IP address / UDP port (received in RANAP) associated to that particular RAB. The packet processing function in the RNC shall send upstream packets of a given RAB to the CN IP address / UDP port (received in RANAP) associated to that particular RAB."

For the PS domain, or for the CS domain in order to allow transport bearer establishment without ALCAP, Transport Layer Address (TLA) is an IP address to be used for the user plane transport. Iu Transport Association (ITA) is used to associate the RAB and the corresponding transport bearer. For the CS domain this information element is either the Binding ID to be used in Transport Network Control Plane signalling during set up of the transport bearer or it contains the UDP port in order to allow transport bearer establishment without ALCAP.

At the moment any Mc interface procedure does not include request for (TLA) or (ITA), which are used in RANAP for MGW's IP address and UDP port negotiation. Therefore those shall be added as conditional fields into Prepare bearer procedure, and thus enable MSC server to provide them to RNC like stated in 25.414. MGW's TLA and ITA shall be sent to RNC in RAB assignment request and RNC shall initialize the Iu UP to this particular IP address.

RAB assignment complete, received by MSC server, shall include TLA and ITA of RNC. Those have to be sent over Mc to MGW to confirm MGW has transport IP address and UDP port in every Iu mode. For that purpose Modify bearer characteristic can be enhanced with new fields for particular purpose and be used right after RAB assignment complete. If Modify bearer characteristic is not sent after RAB assignment complete, MGW has to always wait for the first uplink packet before sending downlink packets, because in that case RNC IP address should be extracted from first received uplink packet.

Because lacking of RNC IP address and UDP port in MGW also applies to several HO cases; enhanced Modify bearer characteristic procedure shall be used during those, too. Particular HOs are UMTS to UMTS and GSM to UMTS HOs. RNC's TLA and ITA received by MSC server in Iu Relocation request shall be sent to MGW.

Conclusion

It is proposed to make the make described enhancements to 3GPP TS 23.205 and 29.232.

3GPP TSG CN WG4 Meeting #15 ***N4-021070***
Helsinki, Finland, 29th July – 2nd August 2002

Title: LS on Restricting the cause value to 1..255
Response to: -
Release: R99 and later releases.

Source: CN4
To: RAN3
Cc: -

Contact Person:
Name: Markus Berg
Tel. Number: +49 711 821 47464
E-mail Address: ma.berg@alcatel.de

Attachments: N4-021067 [CR 219.060-326r1 (R99) on Clarification on the coding of RANAP cause value].

---

1. Overall Description:

In CN4#15, CN4 discussed the problem of mapping the Cause IE as defined in 25.413 to the RANAP cause used in GTP (29.060). Currently GTP simply refers to 25.413 for the definition of this parameter. In 25.413 this cause is defined as a choice of several sub-causes so that up to 10 bits are used for the coding of the cause, even if the cause value itself is only defined from 1 to 256. Unfortunately 29.060 offers only one octet for transporting the RANAP cause. Therefore CN4 identified the following problems:

- GTP cannot transport the RANAP cause in a transparent way. The RANAP cause has to be translated from the 25.413 cause to a simple hex-coded value according to its value definition in 25.413
- Even with the above described mapping function, GTP has a problem to support the cause value 256

To deal with the first problem, CN4 already agreed to replace the simple reference to 25.413 to a description on how to translate the 25.413 Cause IE to the 29.060 RANAP cause. The corresponding R99 CR (N4-021067) is attached for information.
For the second problem, CN4 kindly asks RAN3 to change 25.413 so that it restricts the use of the cause value to a range from 1 to 255. This change should be implemented from R99 onwards. CN4 hopes that this request is acceptable for RAN3 because cause values 129 to 256 are defined as non-standard values and most probably cause value 256 is not used in any actual implementation.

2. Actions:

To RAN3 group.

ACTION:

CN4 kindly asks RAN3 to consider the above-described problem and to update 25.413 to limit the range of RANAP cause values to a range from 1-255 from R99 onwards.

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-021067***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **326** ⌘ **rev** **1** ⌘ Current version: **3.13.0** ⌘

*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:	⌘	Clarification on the coding of RANAP cause value
Source:	⌘	Siemens
Work item code:	⌘	GTP enhancements
Date:	⌘	~~26/06~~31/07/2002
Category:	⌘	**F** ~~Critical correction~~
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:	⌘	Critical correction Only a hint to 25.413 is not sufficient because in 25.413 the RANAP cause is defined as a choice (1 bit for extension) of 6 groups (3 bits) and the largest group has a range of 1-64 (6 bits) so we need 10 bits. 29.060 reserves only one octet for the RANAP cause value. No mapping of the different codings is defined
Summary of change:	⌘	A definition is added that the RANAP cause value is the integer value of the cause defined in 25.413 decremented by 1
Consequences if not approved:	⌘	Definition of the mapping of RANAP cause value from Iu to GTP -is not ~~clear~~defined. This leads to interoperability problems.

Clauses affected:	⌘	7.7.18

	Y	N			
Other specs affected:	**X**	~~**X**~~	Other core specifications	⌘	25.413
		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.

7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..256~~5~~) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet ~~by subtracting 1~~ from the binary encoding of the value part of the RANAP Cause IE.

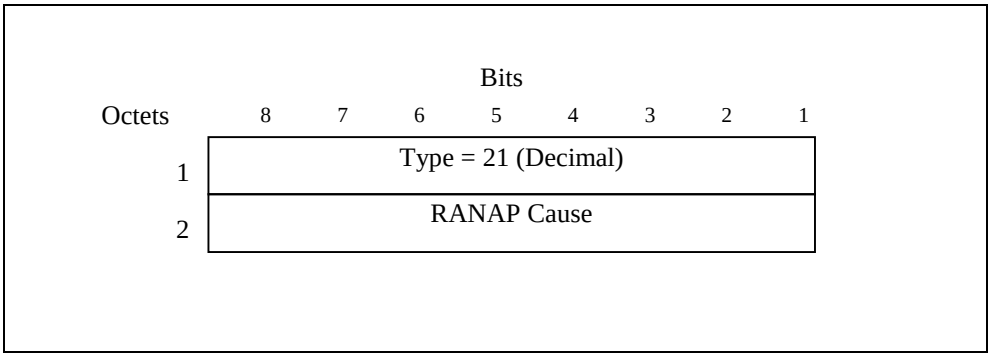

Figure 26: RANAP Cause Information Element

3GPP TSG CN WG4 Meeting #15 ***N4-021032***
Helsinki, Finland, 29th July – 2nd August 2002

Title: LS on the support of vendor-specific commands in Diameter base protocol
Source: CN4
To: SA5
Cc:
Response to: S5-024244

Contact Person:
Name: Miguel A. Pallares
Tel. Number: +34 913394222
E-mail Address: miguel-angel.pallares-lopez@ece.ericsson.se

Attachments: (none)

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1. Overall Description:

CN4 would like to thank SA5 for their LS (N4-020875/S5-024244) on "3GPP specific Diameter applications".

CN4 have reviewed 3GPP TS 32.225 v1.5.0 and come to the following conclusions:

- Some of the AVPs that SA5 has defined collide with some already defined by CN4. The collisions that have been detected are:
  - Called Party Address AVP with Public-Identity AVP, defined in 3GPP TS 29.229 v5.0.0.
  - Calling Party Address AVP with Public-Identity AVP, defined in 3GPP TS 29.229 v5.0.0.
  - S-CSCF information AVP may have the same meaning as Server-Capabilities AVP, defined in 3GPP TS 29.229 v5.0.0.
- When transporting a private user identity, like Private User Id AVP, CN4 makes use of User-Name AVP, already defined in the Diameter base protocol.
- The result code DIAMETER_END_USER_NOT_FOUND may have the same meaning as DIAMETER_ERROR_USER_UNKNOWN (5001), defined in 3GPP TS 29.229 v5.0.0.

SA5 must be already aware of the extensive discussion that has taken place in the IETF AAA WG e-mail list with regards to the support in the Diameter base protocol for vendor-specific commands and AVPs. At the moment of writing this LS the final proposal to satisfy the requirement from the IESG is not known. However, it seems that the support of vendor-specific AVPs won't suffer any damage.

As soon as Diameter base protocol becomes RFC, CN4 will generate the necessary request to IANA for a vendor-specific Application Identity to complete the definition of the protocol for Cx interface. SA5 don't need to initiate a parallel request and will be able to safely make use of the same Application-Id for their accounting application.

CN4 have decided give some time to IETF to come to a stable proposal to deal with vendor-specific commands before establishing the mechanism to manage the 3GPP namespace for Diameter. Meanwhile CN4 has made the following reservations for SA5 inside the 3GPP namespace for AVP codes and result codes. The allocation of this range can be considered as stable in the long term by SA5:

- AVP codes: 200 to 399
- Result codes:
  - 1100 to 1149
  - 2100 to 2149
  - 3100 to 3149
  - 4100 to 4149
  - 5100 to 5149

2. Actions:

To SA5

ACTION: To consider the reserved namespace detailed in this LS when completing 3GPP TS 32.225.

To consider the above comments with regards to the semantic overlapping with some AVPs and result codes already defined by CN4 that SA5 could make use of (please consider both 3GPP TS 29.229 and 29.329).

3. Date of Next CN4 Meeting:

Meeting	Date
CN4#16	23rd-27th Sept 2002
CN4#17	11th-15th Nov 2002

3GPP TSG CN WG4 Meeting #15 ***N4-021031***
Helsinki, Finland, 29th July – 2nd August 2002

Title: IMS authentication vector distribution on the Cx interface
Source: CN4
To: SA3
Cc:
Response to: S3-020437

Contact Person:
Name: Miguel A. Pallares
Tel. Number: +34 913394222
E-mail Address: miguel-angel.pallares-lopez@ece.ericsson.se

Attachments: (none)

---

1. Overall Description:

CN4 would like to thank SA3 for their LS (N4-020914 / S3-020437) on "IMS authentication vector distribution on the Cx interface ".

On the question about whether the number of IMS authentication vectors returned by the HSS must be exactly the same as the number requested by the S-CSCF or not, 3GPP TS 29.228 does not impose such restriction and is compliant with SA3's requirement. The HSS shall return a number of authentication vectors less than or equal to the number requested by the S-CSCF.

2. Actions:

To SA3

ACTION: (none)

3. Date of Next CN4 Meeting:

Meeting	Date
CN4#16	23rd-27th Sept 2002
CN4#17	11th-15th Nov 2002

3GPP TSG CN WG4 Meeting #15 ***N4-021019***
Helsinki, Finland, 29 July – 2 August 2002

Title:	LS in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)
Source:	**CN4**
To:	**SA2**
Cc:	
References:	**S2-022052** LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN. **CR 330** (N4-021061), **CR 331** (N4-021062), **CR 332** (N4-021063)

Contact Person:

Name:	**Giorgi Gulbani**
Tel. Number:	**+358408492393**
E-mail Address:	**giorgi.gulbani@nokia.com**

1. Overall Description:

CN4 thanks SA2 for the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN.

CN4 have discussed the interworking problem after the inter-SGSN RAU procedure when the old SGSN is a R97/R98 SGSN, and therefore supports GTPV0 only.

CN4 is providing the following clarification for SA2 consideration.

1. What is a PDP Context Identifier used for?

For each subscriber the HLR keeps a specific PDP Context ID value, which identifies each PDP Context entry. PDP Context ID is used for various purposes. Those purposes are defined in 3GPP TS 29.002.

One example of the PDP Context Identifier usage would be case, when there is a change in GPRS subscriber data. Then the HLR shall include only the new and/or modified PDP contexts into the GPRS Subscription data IE.

2. Why PDP Context Identifier is transferred in GTPv1, but not in GTPv0 ?

Deficiency in GTPv0 results in that the old SGSN cannot pass the 'PDP Context Identifier' IE to the next SGSN in the SGSN Context Response message. Therefore, the next, new SGSN would get a set of PDP contexts without PDP Context IDs.

3. What kind of problems the above discussed deficiency causes to the system?

When PDP Context IDs are missing in an SGSN, the SGSN faces the following problems:

- 'Insert Subscriber Data' message is received from the HLR. HLR may request certain operations on contexts with certain PDP IDs
- Once sending the SGSN Context Response message over GTPv1, the SGSN **must** set a value for a PDP Context Identifier octet in each the PDP Context IE.

The latter problem is the most severe one.

4. SA2 proposal to use value 255 to indicate PDP Context Identifier is not known.

In order to overcome the deficiency, either GTPv0, or GTPv1 should be modified. There are two reasons why the changes to GTPv0 are unacceptable:

- Adding a new IE into the PDP Context IE would make the change backward incompatible
- Such a backward incompatible change is absolutely too late for GTPv0

Using a specific value in a GTPv1 message is a minor and fully backward compatible change.

CN4 believes that reserving a PDP Context ID value of $(1111\ 1111)_2$ for the cases when SGSN fails to determine the PDP Context ID would be a reasonable solution.

CN4 has approved respective CRs to R99 (CR 330, N4-021061), Rel4 (CR 331, N4-021062) and Rel5 (CR 332, N4-021063) TS 29.060 that mandates the usage of this value.

5. Which specifications should be clarified?

The problem is common for both types of the new SGSN:

- When the new SGSN supports GTPv0 only, then only the received e.g. 'Insert Subscriber Data' message could cause problems.
- When the new SGSN may support both GTPv0 and GTPv1, then both above identified problems would be the case.

The latter case falls under the GTPv0/GTPv1 interworking category. Therefore, CN4 believes that the solution should be defined as well in subclause 11.1.1 of the 3GPP TS 23.060, which defines "Interactions Between GTPv0 (R97) and GTPv1 (R99)".

2. Actions:

To SA2 group.

CN4 kindly asks SA2 to consider the problem in regards with the GTPv0/GTPv1 interworking.

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-021061~~0878~~***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **330** ⌘ **rev** **1-** ⌘ Current version: **3.13.0** ⌘

*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:	⌘	Setting PDP ID after inter-SGSN RAU using GTPv0
Source:	⌘	Nokia
Work item code:	⌘	GPRS
Date:	⌘	~~18~~31 July 2002
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: ⌘ Critical correction

Deficiency in **GTPv0** results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.

SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.

It is proposed to ~~recommend to~~ use a PDP Context ID value $(1111\ 1111)_2$ for such cases.

~~The proposal **would not impose** a requirement to change the existing implementations. Rather, the proposal merely provides the old SGSN with an **option** to indicate the problem to the new SGSN. In case the new SGSN has not been upgraded to support this feature, it would simply **ignore** the indication. Hence, the proposal is **backward** compatible.~~

~~This is an essential correction.~~

Summary of change: ⌘ Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).

Consequences if not approved: ⌘ Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.

Clauses affected:	⌘	7.7.29				
Other specs affected:	⌘	**Y**	**N**		⌘	
		X	~~**X**~~	Other core specifications		23.060 CR 376
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘	Related LS (N4-020881) to S2 “in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)”.				

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.

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.

7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN ~~should~~shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

1	Type = 130 (Decimal)				
2-3	Length				
4	Res-erved	VAA	Res-erved	Order	NSAPI
5	X	X	X	X	SAPI
6	QoS Sub Length				
7 - (q+6)	QoS Sub [4..255]				
q+7	QoS Req Length				
(q+8)-(2q+7)	QoS Req [4..255]				
2q+8	QoS Neg. Length				
(2q+9)-(3q+8)	QoS Neg [4..255]				
(3q+9)-(3q+10)	Sequence Number Down (SND) [1)]				
(3q+11)-(3q+12)	Sequence Number Up (SNU) [1)]				
3q+13	Send N-PDU Number [1)]				
3q+14	Receive N-PDU Number [1)]				
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane				
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I				
3q+23	PDP Context Identifier				
3q+24	Spare 1 1 1 1				PDP Type Organisation
3q+25	PDP Type Number				
3q+26	PDP Address Length				
(3q+27)-m	PDP Address [1..63]				
m+1	GGSN Address for control plane Length				
(m+2)-n	GGSN Address for control plane [4..16]				
n+1	GGSN Address for User Traffic Length				
(n+2)-o	GGSN Address for User Traffic [4..16]				
o+1	APN length				
(o+2)-p	APN				
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier
p+2	Transaction Identifier				

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

TSG CN WG4 Meeting #15 ***N4-021062~~0878~~***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **330** ⌘ **rev** **1-** ⌘ Current version: **4.4.0** ⌘

*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:	⌘	Setting PDP ID after inter-SGSN RAU using GTPv0
Source:	⌘	Nokia
Work item code:	⌘	GPRS
Date:	⌘	~~18~~31 July 2002
Category:	⌘	**A** ~~**F**~~
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)*
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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: ⌘

Critical correction

Deficiency in **GTPv0** results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.

SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.

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~~This is an essential correction.~~

Summary of change: ⌘ Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).

Consequences if not approved: ⌘ Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.

Clauses affected:	⌘	7.7.29				
Other specs affected:	⌘	**Y**	**N**		⌘	
		X	**X**	Other core specifications		23.060 CR 377
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘	Related LS (N4-020881) to S2 “in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)”.				

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The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN ~~should~~shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

1	Type = 130 (Decimal)				
2-3	Length				
4	Res-erved	VAA	Res-erved	Order	NSAPI
5	X	X	X	X	SAPI
6	QoS Sub Length				
7 - (q+6)	QoS Sub [4..255]				
q+7	QoS Req Length				
(q+8)-(2q+7)	QoS Req [4..255]				
2q+8	QoS Neg. Length				
(2q+9)-(3q+8)	QoS Neg [4..255]				
(3q+9)-(3q+10)	Sequence Number Down (SND) [1)]				
(3q+11)-(3q+12)	Sequence Number Up (SNU) [1)]				
3q+13	Send N-PDU Number [1)]				
3q+14	Receive N-PDU Number [1)]				
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane				
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I				
3q+23	PDP Context Identifier				
3q+24	Spare 1 1 1 1				PDP Type Organisation
3q+25	PDP Type Number				
3q+26	PDP Address Length				
(3q+27)-m	PDP Address [1..63]				
m+1	GGSN Address for control plane Length				
(m+2)-n	GGSN Address for control plane [4..16]				
n+1	GGSN Address for User Traffic Length				
(n+2)-o	GGSN Address for User Traffic [4..16]				
o+1	APN length				
(o+2)-p	APN				
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier
p+2	Transaction Identifier				

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #15 ***N4-021063~~0878~~***
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **330** ⌘ **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 **X**

Title:	⌘	Setting PDP ID after inter-SGSN RAU using GTPv0
Source:	⌘	Nokia
Work item code:	⌘	GPRS
Date:	⌘	~~18~~31 July 2002
Category:	⌘	**A** ~~**F**~~
Release:	⌘	Rel-5

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

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘ Critical correction

Deficiency in **GTPv0** results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.

SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.

It is proposed to ~~recommend to~~ use a PDP Context ID value $(1111\ 1111)_2$ for such cases.

~~The proposal **would not impose** a requirement to change the existing implementations. Rather, the proposal merely provides the old SGSN with an **option** to indicate the problem to the new SGSN. In case the new SGSN has not been upgraded to support this feature, it would simply **ignore** the indication. Hence, the proposal is **backward** compatible.~~

~~This is an essential correction.~~

Summary of change: ⌘ Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).

Consequences if not approved: ⌘ Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.

Clauses affected:	⌘	7.7.29				
Other specs affected:	⌘	**Y**	**N**		⌘	
		X	**X**	Other core specifications		23.060 CR 378
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘	Related LS (N4-020881) to S2 “in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)”.				

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.

7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN ~~should~~shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

1	Type = 130 (Decimal)				
2-3	Length				
4	Res-erved	VAA	Res-erved	Order	NSAPI
5	X	X	X	X	SAPI
6	QoS Sub Length				
7 - (q+6)	QoS Sub [4..255]				
q+7	QoS Req Length				
(q+8)-(2q+7)	QoS Req [4..255]				
2q+8	QoS Neg. Length				
(2q+9)-(3q+8)	QoS Neg [4..255]				
(3q+9)-(3q+10)	Sequence Number Down (SND) [1)]				
(3q+11)-(3q+12)	Sequence Number Up (SNU) [1)]				
3q+13	Send N-PDU Number [1)]				
3q+14	Receive N-PDU Number [1)]				
(3q+15)-(3q+18)	Uplink Tunnel Endpoint Identifier Control Plane				
(3q+19)-(3q+22)	UplinkTunnel Endpoint Identifier Data I				
3q+23	PDP Context Identifier				
3q+24	Spare 1 1 1 1				PDP Type Organisation
3q+25	PDP Type Number				
3q+26	PDP Address Length				
(3q+27)-m	PDP Address [1..63]				
m+1	GGSN Address for control plane Length				
(m+2)-n	GGSN Address for control plane [4..16]				
n+1	GGSN Address for User Traffic Length				
(n+2)-o	GGSN Address for User Traffic [4..16]				
o+1	APN length				
(o+2)-p	APN				
p+1	Spare (sent as 0 0 0 0)				Transaction Identifier
p+2	Transaction Identifier				

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

Reordering Required	Value (Decimal)
No	0
Yes	1

Table 49: VPLMN Address Allowed

VPLMN Address Allowed	Value (Decimal)
No	0
Yes	1

3GPP TSG CN WG4 Meeting #15 ***N4-020999***
Helsinki, Finland, 29th July – 2nd August 2002

Title:	**LS on use of IP as transport for the Inter-GMLC Interface**
Response to:	**LS SerG Document 107/02 (N4-020820) on the GMLC-GMLC interface utilising IP as transport from GSMA SerG.** **LS S2-021919 (N4-020866) on Reply to Liaison Statement on use of IP as transport for the Inter-GMLC Interface**
Source:	**3GPP TSG CN4**
To:	**3GPP TSG CN, 3GPP TSG SA2, GSMA SerG LBS sub-group**
Cc:	**GSMA IREG, TSG SA3**

Contact Person:
Name: Pompeo Santoro
Tel. Number: +39 081 5147721
E-mail Address: Pompeo.Santoro@eri.ericsson.se

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1. Overall Description:

TSG CN4 would like to thank GSMA SerG and TSG SA2 for their analysis and recommendations regarding the use of IP as the transport layer for the interGMLC (Lr roaming) interface, and has taken note of the requirements on the Lr interface identified by GSMA SerG and by TSG SA2.

TSG CN4 agreed on the following:

- The protocol for the Lr interface shall be IP based
- The protocol for the Lr interface shall be based on the MLP protocol developed by LIF for the Le interface given the high degree of commonality between the information to be transferred over the Le interface and the information to be transferred over the Lr interface
- The MLP protocol cannot be adopted in its current status for the Lr interface, but needs minor adaptations
- TSG CN4 is willing to delegate the development of the protocol for the Lr interface to OMA (the successor of LIF) on condition that the protocol development is completed on time for use in Rel-6
- TSG CN4 would like to ask OMA to report to each TSG CN plenary meeting the state of development of the protocol for the Lr interface in order to ensure that the protocol definition is completed on time for use in Rel-6.

2. Actions:

To TSG CN

ACTION: TSG CN4 kindly asks TSG CN to ask PCG to open a liaison channel with OMA in order to allow the periodical reporting to TSG CN of the progress of development of the protocol for the Lr interface.

To TSG SA2

ACTION: TSG CN4 kindly asks TSG SA2 to note CN4 decision.

To GSMA SerG

ACTION: TSG CN4 kindly asks GSMA SerG to note CN4 decision.

To OMA (formerly LIF)

ACTION: TSG CN4 kindly asks OMA to note CN4 decision and start the development work for the protocol for the Lr interface.

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-020994***
Helsinki, Finland, 29th July – 2nd August 2002

Title:	**LS on on Diameter security issues**
Response to:	**LS (S5-024240) on Diameter security issues from SA5.**
Release:	**Rel-5**
Work Item:	**OAM-CH (IMS Charging)**
Source:	**CN 4**
To:	**SA5**
Cc:	**SA3**

Contact Person:
Name: Nigel Berry
Tel. Number: +44 1793 88 3245
E-mail Address: nhberry@lucent.com

Attachments: **None**

---

1. Overall Description:

CN4 thanks SA5 for their LS on possible Diameter security issues in N4-020874(S5-024240). CN4 note that the Diameter protocol has been chosen for Rf and Ro interfaces to achieve the accounting transfer for the off-line and the on-line charging processes.

CN4 have done a preliminary examination of the issue and the Diameter base protocol relies on a hop by hop security approach. In environments where two peers communicate through intermediate nodes (e.g. relay or proxy agents), integrity and confidentiality are lost at each agent.

It is CN4's opinion that if the network elements involved in the charging architecture are within the same Network operator's domain the Network Domain Security mechanisms already provided under SA3's remit should satisfy SA5's concern.

2. Actions:

To SA5 group.

ACTION: **None**

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 ***N4-020991***
Helsinki, Finland, 29th July – 2nd August 2002

Title: Response to LS on Network Integration Testing
Response to: LS (N4-020864) on Network Integration Testing from TC SPAN

Source: 3GPP CN4
To: TC SPAN, WG SPAN 13
Cc:

Contact Person:
Name: Ulrich Wiehe
Tel. Number: +49 6621 169 139
E-mail Address: ulrich.wiehe@icn.siemens.de

Attachments: none

---

1. Overall Description:

CN4 thank TC SPAN for their LS on Network Integration Testing and for the documents attached to the LS (Draft TS 130298 –1, TS 130 305-1, TS 130306-1, TS 130307-1, TS 130307-2).

CN4 would like to inform TC SPAN that these documents have been brought to the attention of 3GPP member companies represented in CN4. Depending on reactions received from member companies by means of contributions to the next CN4 meeting, CN4 may provide a more detailed response to TC SPAN at that time.

2. Actions:

none

3. Date of Next CN4 Meetings:

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami Beach, Florida, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand

3GPP TSG CN WG4 Meeting #15 **N4-021030**
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **23.008** **CR** **055** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Definition of the Subscribed media parameter
Source:	⌘	Orange
Work item code:	⌘	Cx interface
Date:	⌘	18/07/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘

The S-CSCF needs to know what are the medias subscribed by the subscriber: it has to check the SDP parameters in the SIP message in order to remove all the non-subscribed media, codec…

The CN1 group based its work on this assumption, as shown in the following text extracted from the **TS 24.229**, chapter 6 "Application usage of SDP":

6.3 Procedures at the S-CSCF

When the S-CSCF receives an INVITE or reINVITE, the S-CSCF shall examine the media parameters in the received SDP, and remove those media streams which are not allowed based on the subscription. The S-CSCF will also remove those codecs from the approved media streams which are not allowed by the subscription. If the S-CSCF modifies the SDP, it shall also revise the SDP to reflect the modified bandwidth requirements. For the rejected media streams, the S-CSCF should ignore the b= lines.

The CN4 group has then to specify the "subscribed media" format and the transfer of this information to the S-CSCF.

Summary of change: ⌘ This CR specifies the "Subscribed Media" parameter

Consequences if not approved: ⌘ Inconsistency between CN1 and CN4 specifications.

Clauses affected: ⌘

Y N

Other specs affected:	⌘	X		Other core specifications	⌘	TS 29.228 CR 006
			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 ******

0.1 References

…

[48] IETF RFC 2486: "The Network Access Identifier"

[49] 3GPP TS 33.203 "Access security for IP-based services"

[50] 3GPP TS 23.002 “Network architecture”

[51] draft-ietf-aaa-diameter-08.txt: "Diameter Base Protocol", work in progress

[52] 3GPP TS 33.102 "Security architecture"

[53] 3GPP TS 23.218 "IP Multimedia (IM) call model"

[54] 3GPP TS 29.328 "IP Multimedia (IM) Subsystem Sh Interface; Signalling flows and message contents (Release 5)"

[55] IETF RFC 2327 "SDP: Session Description Protocol"

[56] 3GPP TS 29.228 "IP Multimedia Subsystem Cx and Dx Interfaces"

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

3.5 Data related to Application and service triggers

For definition and handling of these data see 3GPP TS 23.218 [53]

~~.~~3.5.1 ~~Subscribed Media~~Core Network Service Authorisation

The Core Network Service Authorisation shall provide a list of Subscribed Media ~~shall provide a list of media types~~ that the subscriber is authorized to request. ~~-~~Each subscribed media~~This shall~~ may include the following parameters (only the media parameter is mandatory):

- Media: type of the media (corresponds to the "m" parameter of the SDP field). See [55] for the coding (e.g. audio, video).
- Direction-tag: down link, up link or both (include in the "a" parameter of the SDP field). See [55] for the coding (e.g. sendrecv).
- Codec: comma-separated list of codecs authorized for this media (include in the "a" parameter of the SDP field). See [55] for the coding (e.g. H.261, AMR).
- MaxBandwidth: maximum bandwidth authorized for the media (corresponds to the "b" parameter of the SDP field). See [55] for the coding (e.g. 25.4).

~~SDP Media Types, Transport Protocols, Media Format and Bandwidth. The format of the list and the parameters contained within is FFS.~~

The Subscribed Media is permanent data stored in the HSS and in the S-CSCF.

~~3.5.1 Void~~

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

5.3 IP Multimedia Service Data Storage

Table 3: Overview of data used for IP Multimedia services

PARAMETER	Subclause	HSS	S-CSCF	AS	TYPE
Private User Identity	3.1.1	M	M	-	P
Public Identity	3.1.2	M	M	-	P
Registration Status	3.2.1	M	-	-	T
S-CSCF Name	3.2.2	M	-	-	T
Diameter Client Address of S-CSCF	3.2.3	M	-	-	T
Diameter Server Address of HSS	3.2.3	-	M	-	T
RAND, XRES, CK, IK and AUTN	3.3.1	M	C	-	T
Server Capabilities	3.4.1	C	C	-	P
Core Network Service Authorisation	3.5.1	C	C		P
Initial Filter Criteria	3.5.2	C	C	-	P
Service Indication	3.5.4	M	-	M	P

****** END OF MODIFICATIONS ******

3GPP TSG CN WG4 Meeting #15 **N4-021096**
Helsinki, Finland, 29th July – 2nd August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **006** ⌘ **rev** **2** ⌘ 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 **X**

Title:	⌘	Definition of the Subscribed media parameter
Source:	⌘	Orange
Work item code:	⌘	Cx interface
Date:	⌘	18/07/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:
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R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘

The S-CSCF needs to know what are the medias subscribed by the subscriber: it has to check the SDP parameters in the SIP message in order to remove all the non-subscribed media, codec…

The CN1 group based its work on this assumption, as shown in the following text extracted from the **TS 24.229**, chapter 6 "Application usage of SDP":

6.3 Procedures at the S-CSCF

When the S-CSCF receives an INVITE or reINVITE, the S-CSCF shall examine the media parameters in the received SDP, and remove those media streams which are not allowed based on the subscription. The S-CSCF will also remove those codecs from the approved media streams which are not allowed by the subscription. If the S-CSCF modifies the SDP, it shall also revise the SDP to reflect the modified bandwidth requirements. For the rejected media streams, the S-CSCF should ignore the b= lines.

The CN4 group has then to specify the "subscribed media" format and the transfer of this information to the S-CSCF.

Summary of change: ⌘ This CR defines the "Core Network Service Authorisation"

Consequences if not approved: ⌘ Inconsistency between CN1 and CN4 specifications and interoperability issues.

Clauses affected: ⌘ 2. and B.2.X (new chapter)

Y **N**

Other specs affected:	⌘	X		Other core specifications	⌘	TS 23.008 CR 055
			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 ******

2 References

[1] 3GPP TS 23.228: "IP Multimedia (IM) Subsystem – Stage 2 (Release 5)".

[2] 3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP".

[3] 3GPP TS 33.203: "Access security for IP-based services".

[4] 3GPP TS 23.002 "Network architecture".

[5] 3GPP TS 29.229: "Cx Interface based on Diameter – Protocol details"

[6] 3GPP TS 23.218: "IP Multimedia (IM) Session Handling; IP Multimedia (IM) call model"

[7] IETF RFC 2045; ~~Freed, N. and N. Borestein,~~ "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies"~~, RFC 2045, November 1996.~~

[8] IETF RFC 2327; "SDP: Session Description Protocol"

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

B.2 Service profile

The following picture gives an outline of the UML model of the Service Profile class:

:

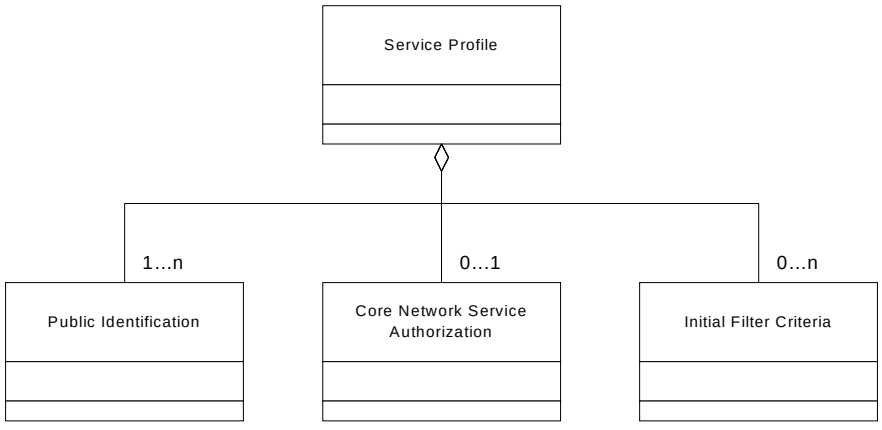

Figure B.2.1: Service Profile

Each instance of the Service Profile class consists of one or several instances of the class Public Identification. Public Identification class contains the public identities of the user associated with that service profile. The information in the Core Network Service Authorization and Initial Filter Criteria classes apply to all public identity instances, which are included in one Service profile class.

Each instance of the Service Profile class contains zero or one instance of the class Core Network Service Authorization. If no instance of the class Core Network Service Authorization is present, no filtering related to subscribed media applies in S-CSCF.

~~Editor's Note: The content of this information element is FFS. The intention is that it can be used to carry information that can be forced at CN level like, e.g. the maximum number or simultaneous multimedia sessions of a user.~~

Each instance of the class Service Profile contains zero or several instances of the class Initial Filter Criteria.

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

B.2.x Core Network Service Authorization

The following picture gives an outline of the UML model of Core Network Service Authorization class:

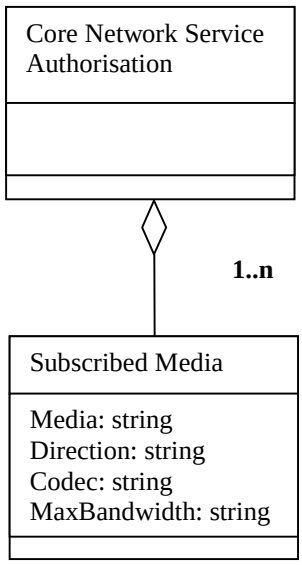

Figure B.2.x.1: Core Network Service Authorisation

Each instance of the Core Network Service Authorization class contains one or several instances of the class SubscribedMedia, defining the media that a user is authorized to use.

The syntax of Subscribed Media contains:

Parameter Name	Parameter Description	Status
Media	Type of the media (corresponds to the "m" parameter of the SDP field). See [8] for the coding (e.g. audio, video)	M
Direction-tag	Direction authorised for the media. It can be down link, up link or both (include in the "a" parameter of the SDP field). If absent, it means that any direction can be used for the media. See [8] for the coding (e.g. sendrecv)	O
Codec	Comma-separated list of codecs authorized for the media (include in	O

	the "a" parameter of the SDP field). If absent, it means that any codec can be used for the media. See [8] for the coding (e.g. H.261, AMR)	
MaxBandwidth	Maximum Bandwidth authorized for the media (corresponds to the "b" parameter of the SDP field related to the media). (Note 1) If absent, it means that no bandwidth restriction applies for the media. See [8] for the coding (e.g. 25.4)	O

Note 1: If multiple codecs are authorised for a single media type, it may be necessary to have multiple instances of subscribed media to assign a specific authorised bandwidth to each codec.

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

Annex E (normative): XML schema for the Cx interface user profile

The file CxDataType.xsd, attached to this specification, contains the XML schema for the Cx interface user profile. Such XML schema details all the data types on which XML documents containing Cx profile information shall be based. The XML schema file is intended to be used by an XML parser.

Table E.1 describes the data types and the dependencies among them that configure the XML schema.

Table E.1: XML schema for Cx interface: simple data types

Data type	Tag	Base type	Comments
tPriority	Priority	integer	>= 0
tGroupID	Group	integer	>= 0
tDefaultHandling	DefaultHandling	enumerated	Possible values: 0 (SESSION_CONTINUED) 1 (SESSION_TERMINATED)
tDirectionOfRequest	SessionCase	enumerated	Possible values: 0 (ORIGINATING_SESSION) 1 TERMINATING_SESSION 2 (TERMINATING_UNREGISTERED)
tPrivateID	PrivateID	anyURI	Syntax described in RFC 2486
tSIP_URL	PublicIdentity	anyURI	Syntax described in RFC 3261
tTEL_URL	PublicIdentity	anyURI	Syntax described in RFC 2806
tPublicIdentity	PublicIdentity	(union)	Union of tSIP_URL and tTEL_URL
tServiceInfo	ServiceInfo	string	
tString	Method, Header, Content, Line	string	
tBool	ConditionTypeCNF, ConditionNegated	enumerated	Possible values: 0 (FALSE) 1 (TRUE)

Table E.2: XML schema for Cx interface: complex data types

Data type	Tag	Compound of		
		Tag	Type	Cardinality
tIMSSubscription	IMSSubscription	PrivateID	tPrivateID	1
		ServiceProfile	tServiceProfile	(1 to 20)
		CoreNetworkServiceAuthorisation	tCoreNetworkServiceAuthorisation	(0 to 1)
tServiceProfile	ServiceProfile	PublicIdentity	tPublicIdentity	(1 to 20)
		InitialFilterCriteria	tInitialFilterCriteria	(1 to 10)
tCoreNetworkServiceAuthorisation	CoreNetworkServiceAuthorisation	SubscribedMedia	tSubscribedMedia	(1 to n)
tSubscribedMedia	SubscribedMedia	MediaType	tString	1
		DirectionTag	tString	(0 to 1)
		Codec	tString	(0 to 1)
		MaxBandwidth	tString	(0 to 1)
tInitialFilterCriteria	InitialFilterCriteria	Priority	tPriority	1
		TriggerPoint	tTrigger	(0 to 1)
		ApplicationServer	tApplicationServer	1
tTrigger	Trigger	SPI	tSiPoInt	(0 to 25)
		ConditionTypeCNF	tBool	1
tSiPoInt	SPI	ConditionNegated	tBool	(0 to 1)
		Group	tGroupID	(1 to 25)
		Choice of: Method	tString	1
		Choice of: SIPHeader	tHeader	1
		Choice of: SessionCase	tDirectionOfRequest	1
		Choice of: SessionDescription	tSessionDescription	1
tHeader	SIPHeader	Header	tString	1

		Content	tString	(0 to 1)
tSessionDescription	SessionDescription	Line	tString	1
		Content	tString	(0 to 1)
tApplicationServer	ApplicationServer	ServerName	tSIP_URL	1
		DefaultHandling	tDefaultHandling	(0 to 1)
		ServiceInfo	tServiceInfo	(0 to 1)

****** END OF MODIFICATIONS ******

3GPP TSG CN WG4 Meeting #15 ***N4-021107***
Helsinki, Finland, 29th July – 2nd August 2002

Title:	**LS on Subscribed Media Parameter**
Response to:	
Release:	**Rel-5**
Work Item:	**IMS Subscriber Data**
Source:	**CN4**
To:	**SA2, CN1**
Cc:	**CN3**

Contact Person:
Name: François Dronne - ORANGE
Tel. Number: +33 1 45 29 62 74
E-mail Address: francois.dronne@francetelecom.com

Attachments: **Related approved CN4 CR: N4-021096 and N4-021030**

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1. Overall Description

CN4 has specified the Core Network Service Authorisation parameter, stored in the HSS, which identifies the media subscribed by a subscriber. This parameter can contain several instances of Subscribed Media. It is part of the subscriber data transferred from HSS to S-CSCF.

An instance of Subscribed Media is defined by the four following parameters, which are available in the SDP part of the SIP message:

- **Media**: type of the media (corresponds to the "m" parameter of the SDP field).
- **Direction-tag**: down link, up link or both (included in the "a" parameter of the SDP field).
- **Codec**: list of codecs authorised for this media (included in the "a" parameter of the SDP field).
- **MaxBandwidth**: maximum bandwidth authorized for the media (corresponds to the "b" parameter of the SDP field).

Note that only the media type is mandatory and that the three other parameters are optional. (See CRs attached for the full implementation description)

The CN4 meeting understanding, regarding the check done by the S-CSCF is the following:

1/ the S-CSCF checks incoming or outgoing SIP messages based on subscription information. Therefore the subscribed medias shall be downloaded from the HSS.

2/ The S-CSCF compares the SDP parameters of the request with the ones of the profile. If any SDP parameter doesn't match the criteria, the S-CSCF can remove it from the SDP field (e.g. if there is several instances of codec for the same media) or the media itself.

Our assumption is based on the stage 2 and stage 3 specifications, and especially on the TS 24.229, chapter 6 "Application usage of SDP":

6.3 Procedures at the S-CSCF

When the S-CSCF receives an INVITE or reINVITE, the S-CSCF shall examine the media parameters in the received SDP, and remove those media streams which are not allowed based on the subscription. The S-CSCF will also remove those codecs from the approved media streams which are not allowed by the subscription. If the S-CSCF modifies the SDP, it shall also revise the SDP to reflect the modified bandwidth requirements. For the rejected media streams, the S-CSCF should ignore the b= lines.

The other specifications (TS 23.228, TS 24.228) mention the check done by the S-CSCF but are less explicit about the way the S-CSCF does it.

2. Actions

To SA2 group:

CN4 kindly ask SA2 to handle the following actions:

1/ Validate the CN4 understanding that S-CSCF needs to receive from the HSS the above mentioned parameters (i.e. media type, direction, codec(s) and bandwidth).

2/ Update, if needed, the TS 23.228 in order to reflect the check done by the S-CSCF.

3/ Identify any need to correlate the subscribed QoS parameter of the PS subscriber profile stored in the HLR and the Subscribed Medias of the IMS profile stored in the HSS.

To CN1 group:

CN4 kindly ask CN1 to handle the following actions:

1/ Update (if needed) the TS 24.228 and the TS 24.229 in order to specify the checks done by the S-CSCF when receiving an outgoing/incoming SIP message.

2/ Check if the SDP part of the SIP message is always "readable" by the S-CSF, as CN4 identifies the possibility to encrypt this part of the SIP message.

3. Date of Next CN4 Meetings

CN4 #16	23rd Sep. – 27th Sep. 2002	Miami, USA
CN4 #17	11th Nov. – 15th Nov. 2002	Bangkok, Thailand