

**TSG RAN Meeting #27**  
**Tokyo, Japan, 09 - 11 March 2005**

**RP-050052**

**Title** CRs (Rel-5 and Rel-6 Category A) to TS 25.413 and TS 25.415  
**Source** TSG RAN WG3  
**Agenda Item** 8.4.5

RAN3 Tdoc	Spec	CR	Rev	Cat	curr. Vers.	new Vers.	Rel	Work item	Title
R3-050344	25.413	731	2	F	5.10.0	5.11.0	Rel-5	TEI5	Correction of RANAP Containers and CRRM
R3-050345	25.413	740	1	A	6.4.1	6.5.0	Rel-6	TEI5	Correction of RANAP Containers and CRRM
R3-050348	25.413	729	2	F	5.10.0	5.11.0	Rel-5	TEI5	Essential Correction on Direct Transfer Messages
R3-050349	25.413	730	2	A	6.4.1	6.5.0	Rel-6	TEI5	Essential Correction on Direct Transfer Messages
R3-050358	25.415	122	3	F	5.4.0	5.5.0	Rel-5	TEI5	Negative Acknowledgement of Init procedure
R3-050341	25.415	123	2	A	6.1.0	6.2.0	Rel-6	TEI5	Negative Acknowledgement of Init procedure

3GPP TSG-RAN WG3 #46  
 Phoenix, USA, 14<sup>th</sup> February – 18 February 2005

⌘ **R3-050348**

CR-Form-v7.1	<b>CHANGE REQUEST</b>
⌘ <b>25.413 CR 729</b> ⌘ rev <b>2</b> ⌘ Current version: <b>5.10.0</b> ⌘	

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

<b>Title:</b>	⌘ Essential Correction on Direct Transfer Messages		
<b>Source:</b>	⌘ RAN3		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ 14/02/2005
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: <b>Ph2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6) <b>Rel-7</b> (Release 7)

<b>Reason for change:</b>	⌘ The current specification leads to drop call during the relocation if more direct transfer messages are exchanged than anticipated according to CR2500 to TS25.331.
<b>Summary of change:</b>	⌘ RANAP is corrected into a limited number of Direct Transfer messages to be handled on the downlink.  <u>Impact assessment towards the previous version of the specification (same release):</u>  This CR has isolated impact towards the previous version of the specification (same release).  This CR has an impact under functional point of view.  The impact can be considered isolated because it only affects the Relocation Preparation procedure.
<b>Consequences if not approved:</b>	⌘ Some calls dropped during the relocation.

<b>Clauses affected:</b>	⌘ 8.6.2						
<b>Other specs</b>	⌘ <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table> Other core specifications	Y	N	X		⌘ TS25.413 CR730	
Y	N						
X							

<b>affected:</b>	<input checked="" type="checkbox"/>	Test specifications	
	<input checked="" type="checkbox"/>	O&M Specifications	
<b>Other comments:</b>	⌘		

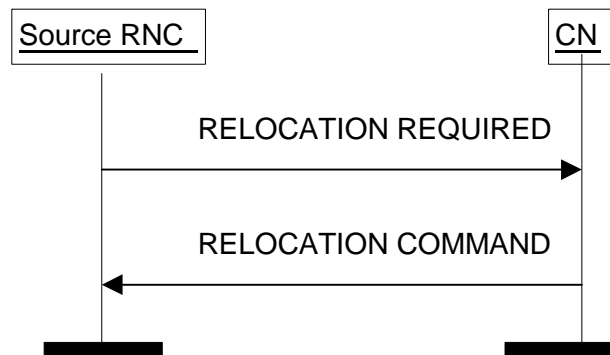
**How to create CRs using this form:**

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.

## 8.6.2 Successful Operation



**Figure 5: Relocation Preparation procedure. Successful operation.**

The source RNC initiates the procedure by sending a RELOCATION REQUIRED message. The source RNC shall decide whether to initiate an intra-system Relocation or an inter-system handover. In case of intra-system Relocation, the source RNC shall indicate in the *Source ID* IE the RNC-ID of the source RNC and in the *Target ID* IE the RNC-ID of the target RNC. In case of inter-system handover, the source RNC shall indicate in the *Source ID* IE the Service Area Identifier and in the *Target ID* IE the cell global identity of the cell in the target system. The source RNC shall indicate the appropriate cause value for the Relocation in the *Cause* IE. Typical cause values are "Time critical Relocation", "Resource optimisation relocation", "Relocation desirable for radio reasons", "Directed Retry", "Reduce Load in Serving Cell", "Access Restricted Due to Shared Networks".

The source RNC shall determine whether the relocation of SRNS shall be executed with or without involvement of the UE. The source RNC shall set accordingly the *Relocation Type* IE to "UE involved in relocation of SRNS" or "UE not involved in relocation of SRNS".

In case of intra-system Relocation, the source RNC shall include in the RELOCATION REQUIRED message the *Source RNC to Target RNC Transparent Container* IE. This container shall include the *Relocation Type* IE and the *Number of Iu Instances* IE containing the number of Iu signalling connections existing for the UE .

Only in case of intra-system relocation, the *Source RNC to Target RNC Transparent Container* IE shall include the *Integrity Protection Key* IE from the last received domain on which the Security Mode Control procedure has been successfully performed, and the associated *Chosen Integrity Protection Algorithm* IE that has been selected for this domain.

Only in case of intra-system relocation, the *Source RNC to Target RNC Transparent Container* IE shall include the *Ciphering Key* IE for the signalling data from the last received domain on which the Security Mode Control procedure has been successfully performed if the ciphering has been started, together with the associated *Chosen Encryption Algorithm* IE that has been selected for this domain. If the ciphering has not been started, the RNC may include the *Ciphering Key* IE and the *Chosen Encryption Algorithm* IE if they are available.

Only in case of intra-system relocation, for each domain where the Security Mode Control procedure has been successfully performed in the source RNC, the *Source RNC to Target RNC Transparent Container* IE shall include the *Chosen Encryption Algorithm* IE of CS (PS respectively) user data corresponding to the ciphering alternative that has been selected for this domain. If the Security Mode Control procedure had not been successful or performed for one domain or had proposed no ciphering alternative, the *Chosen Encryption Algorithm* IE for the user data of this domain shall not be included. When both the CS and the PS user data *Chosen Encryption Algorithm* IEs are provided, they shall be the same.

This *Source RNC to Target RNC Transparent Container* IE shall include the *RRC Container* IE. If the *Relocation Type* IE is set to "UE not involved in relocation of SRNS" and the UE is using DCH(s), DSCH(s), USCH(s) or HS-DSCH, the *Source RNC to Target RNC Transparent Container* IE shall:

- for each RAB include the RAB ID, the *CN Domain Indicator* IE and the mapping between each RAB subflow and transport channel identifier(s) over Iur, i.e. if the RAB is carried on a DCH(s), the DCH ID(s) shall be included, and when it is carried on DSCH(s), USCH(s) or HS-DSCH, the DSCH ID(s), USCH ID(s) or HS-DSCH MAC-d Flow ID respectively shall be included,

- only in the case the active SRBs in SRNC are not all mapped onto the same DCH, include the *SRB TrCH Mapping* IE containing for each SRB the SRB ID and the associated transport channel identifier over Iur, i.e. if the SRB is carried on a DCH, the DCH ID shall be included, and when it is carried on DSCH or USCH, the DSCH ID or USCH ID respectively shall be included.

If the *Relocation Type* IE is set to "UE not involved in relocation of SRNS", the *d-RNTI* IE shall be included in the *Source RNC to Target RNC Transparent Container* IE. If the *Relocation Type* IE is set to "UE involved in relocation of SRNS", the *Target Cell ID* IE shall be included in the *Source RNC to Target RNC Transparent Container* IE.

In case of inter-system handover to GSM the RNC:

- shall include the *MS Classmark 2* and *MS Classmark 3* IEs received from the UE in the RELOCATION REQUIRED message to the CN.
- shall include the *Old BSS to New BSS Information* IE within the RELOCATION REQUIRED message only if the information is available. This information shall include, if available, the current traffic load in the source cell, i.e. prior to the inter-system handover attempt. This information shall also include the source cell identifier the included traffic load values correspond to. In the case the UE is using, prior to the inter-system handover attempt, radio resources of more than one cell, it is implementation specific for which cell the source RNC should report the current traffic load and the cell identifier.

When the source RNC sends the RELOCATION REQUIRED message, it shall start the timer  $T_{RELOCprep}$ .

When the preparation including resource allocation in the target system is ready and the CN has decided to continue the relocation of SRNS, the CN shall send a RELOCATION COMMAND message to the source RNC and the CN shall start the timer  $T_{RELOCcomplete}$ .

If the *Target RNC To Source RNC Transparent Container* IE or the *L3 information* IE is received by the CN from the relocation target, it shall be included in the RELOCATION COMMAND message.

The RELOCATION COMMAND message may also contain the *Inter-System Information Transparent Container* IE.

For each RAB successfully established in the target system and originating from the PS domain, the RELOCATION COMMAND message shall contain at least one pair of Iu transport address and Iu transport association to be used for the forwarding of the DL N-PDU duplicates towards the relocation target. If more than one pair of Iu transport address and Iu transport association is included, the source RNC shall select one of the pairs to be used for the forwarding of the DL N-PDU duplicates towards the relocation target. Upon reception of the RELOCATION COMMAND message from the PS domain, the source RNC shall start the timer  $T_{DATAfwd}$ .

The Relocation Preparation procedure is terminated in the CN by transmission of the RELOCATION COMMAND message.

If the target system (including target CN) does not support all existing RABs, the RELOCATION COMMAND message shall contain a list of RABs indicating all the RABs that are not supported by the target system. This list is contained in the *RABs to Be Released* IE. The source RNC shall use this information to avoid transferring associated contexts where applicable and may use this information e.g. to decide if to cancel the relocation or not. The resources associated with these not supported RABs shall not be released until the relocation is completed. This is in order to make a return to the old configuration possible in case of a failed or cancelled relocation.

Upon reception of the RELOCATION COMMAND message the source RNC shall stop the timer  $T_{RELOCprep}$ , start the timer  $T_{RELOCoverall}$  and terminate the Relocation Preparation procedure. The source RNC is then defined to have a Prepared Relocation for that Iu signalling connection.

When the Relocation Preparation procedure is successfully terminated and when the source RNC is ready, the source RNC should trigger the execution of relocation of SRNS.

#### **Interactions with other procedures:**

If, after a RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a RANAP message initiating another connection oriented RANAP class 1 or class 3 procedure (except IU RELEASE COMMAND message, which shall be handled normally) via the same Iu signalling connection, the source RNC shall either:

1. cancel the Relocation Preparation procedure i.e. execute the Relocation Cancel procedure with an appropriate value for the *Cause* IE, e.g. "Interaction with other procedure", and after successful completion of the Relocation Cancel procedure, the source RNC shall continue the initiated RANAP procedure;

or

2. terminate the initiated RANAP procedure without any changes in UTRAN by sending the appropriate response message with the cause value "Relocation Triggered" to the CN. The source RNC shall then continue the relocation of SRNS.

If during the Relocation Preparation procedure the source RNC receives a DIRECT TRANSFER message it shall be handled normally in the uplink. In the downlink, it shall be handled normally up to the anticipated limit according to section 14.12.4.2 [10].

If during the Relocation Preparation procedure the source RNC receives connection oriented RANAP class 2 messages (with the exception of DIRECT TRANSFER message) it shall decide to either execute the procedure immediately or suspend it. In case the relocation is cancelled, the RNC shall resume any suspended procedures (if any).

After the Relocation Preparation procedure is successfully terminated, all RANAP messages (except IU RELEASE COMMAND message, which shall be handled normally) received via the same Iu signalling bearer shall be ignored by the source RNC.

3GPP TSG-RAN WG3 #46  
 Phoenix, USA, 14<sup>th</sup> February – 18 February 2005

⌘ **R3-050349**

CR-Form-v7.1	<b>CHANGE REQUEST</b>
⌘ <b>25.413 CR 730</b> ⌘ rev <b>2</b> ⌘ Current version: <b>6.4.1</b> ⌘	

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

<b>Title:</b>	⌘ Essential Correction on Direct Transfer Messages		
<b>Source:</b>	⌘ RAN3		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ 14/02/2005
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-6
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: <b>Ph2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6) <b>Rel-7</b> (Release 7)

<b>Reason for change:</b>	⌘ The current specification leads to drop call during the relocation if more direct transfer messages are exchanged than anticipated according to CR2501 to TS25.331.
<b>Summary of change:</b>	⌘ RANAP is corrected into a limited number of Direct Transfer messages to be handled on the downlink.  <u>Impact assessment towards the previous version of the specification (same release):</u>  This CR has isolated impact towards the previous version of the specification (same release).  This CR has an impact under functional point of view.  The impact can be considered isolated because it only affects the Relocation Preparation procedure.
<b>Consequences if not approved:</b>	⌘ Some calls dropped during the relocation.

<b>Clauses affected:</b>	⌘ 8.6.2						
<b>Other specs</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table> Other core specifications	Y	N	X		⌘ TS25.413 CR729	
Y	N						
X							

<b>affected:</b>	<input checked="" type="checkbox"/>	Test specifications	
	<input checked="" type="checkbox"/>	O&M Specifications	
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

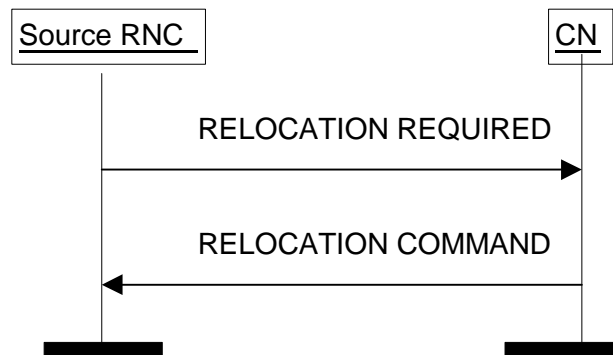
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## 8.6.2 Successful Operation



**Figure 5: Relocation Preparation procedure. Successful operation.**

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In case of intra-system Relocation, the source RNC shall include in the RELOCATION REQUIRED message the *Source RNC to Target RNC Transparent Container* IE. This container shall include the *Relocation Type* IE and the *Number of Iu Instances* IE containing the number of Iu signalling connections existing for the UE .

Only in case of intra-system relocation, the *Source RNC to Target RNC Transparent Container* IE shall include the *Integrity Protection Key* IE from the last received domain on which the Security Mode Control procedure has been successfully performed, and the associated *Chosen Integrity Protection Algorithm* IE that has been selected for this domain.

Only in case of intra-system relocation, the *Source RNC to Target RNC Transparent Container* IE shall include the *Ciphering Key* IE for the signalling data from the last received domain on which the Security Mode Control procedure has been successfully performed if the ciphering has been started, together with the associated *Chosen Encryption Algorithm* IE that has been selected for this domain. If the ciphering has not been started, the RNC may include the *Ciphering Key* IE and the *Chosen Encryption Algorithm* IE if they are available.

Only in case of intra-system relocation, for each domain where the Security Mode Control procedure has been successfully performed in the source RNC, the *Source RNC to Target RNC Transparent Container* IE shall include the *Chosen Encryption Algorithm* IE of CS (PS respectively) user data corresponding to the ciphering alternative that has been selected for this domain. If the Security Mode Control procedure had not been successful or performed for one domain or had proposed no ciphering alternative, the *Chosen Encryption Algorithm* IE for the user data of this domain shall not be included. When both the CS and the PS user data *Chosen Encryption Algorithm* IEs are provided, they shall be the same.

This *Source RNC to Target RNC Transparent Container* IE shall include the *RRC Container* IE. If the *Relocation Type* IE is set to "UE not involved in relocation of SRNS" and the UE is using DCH(s), DSCH(s), USCH(s) or HS-DSCH, the *Source RNC to Target RNC Transparent Container* IE shall:

- for each RAB include the RAB ID, the *CN Domain Indicator* IE and the mapping between each RAB subflow and transport channel identifier(s) over Iur, i.e. if the RAB is carried on a DCH(s), the DCH ID(s) shall be included, and when it is carried on DSCH(s), USCH(s) or HS-DSCH, the DSCH ID(s), USCH ID(s) or HS-DSCH MAC-d Flow ID respectively shall be included,

- only in the case the active SRBs in SRNC are not all mapped onto the same DCH, include the *SRB TrCH Mapping* IE containing for each SRB the SRB ID and the associated transport channel identifier over Iur, i.e. if the SRB is carried on a DCH, the DCH ID shall be included, and when it is carried on DSCH or USCH, the DSCH ID or USCH ID respectively shall be included.

If the *Relocation Type* IE is set to "UE not involved in relocation of SRNS", the *d-RNTI* IE shall be included in the *Source RNC to Target RNC Transparent Container* IE. If the *Relocation Type* IE is set to "UE involved in relocation of SRNS", the *Target Cell ID* IE shall be included in the *Source RNC to Target RNC Transparent Container* IE.

In case a Trace Recording Session is active in the Source RNC due to a Signalling Based Activation (see ref [37]), the *Trace Recording Session Information* IE containing information identifying the Trace Record being generated may be included in the *Source RNC to Target RNC Transparent Container* IE.

In case the UE has been linked to at least one Multicast Service, the Source RNC shall include in the *Source RNC to Target RNC Transparent Container* IE the *MBMS Linking Information* IE, if available.

In case of inter-system handover to GSM the RNC:

- shall include the *MS Classmark 2* and *MS Classmark 3* IEs received from the UE in the RELOCATION REQUIRED message to the CN.
- shall include the *Old BSS to New BSS Information* IE within the RELOCATION REQUIRED message only if the information is available. This information shall include, if available, the current traffic load in the source cell, i.e. prior to the inter-system handover attempt. This information shall also include the source cell identifier the included traffic load values correspond to. In the case the UE is using, prior to the inter-system handover attempt, radio resources of more than one cell, it is implementation specific for which cell the source RNC should report the current traffic load and the cell identifier.

When the source RNC sends the RELOCATION REQUIRED message, it shall start the timer  $T_{\text{RELOCprep}}$ .

When the preparation including resource allocation in the target system is ready and the CN has decided to continue the relocation of SRNS, the CN shall send a RELOCATION COMMAND message to the source RNC and the CN shall start the timer  $T_{\text{RELOCcomplete}}$ .

If the *Target RNC To Source RNC Transparent Container* IE or the *L3 information* IE is received by the CN from the relocation target, it shall be included in the RELOCATION COMMAND message.

The RELOCATION COMMAND message may also contain the *Inter-System Information Transparent Container* IE.

For each RAB successfully established in the target system and originating from the PS domain, the RELOCATION COMMAND message shall contain at least one pair of Iu transport address and Iu transport association to be used for the forwarding of the DL N-PDU duplicates towards the relocation target. If more than one pair of Iu transport address and Iu transport association is included, the source RNC shall select one of the pairs to be used for the forwarding of the DL N-PDU duplicates towards the relocation target. Upon reception of the RELOCATION COMMAND message from the PS domain, the source RNC shall start the timer  $T_{\text{DATAfwd}}$ .

The Relocation Preparation procedure is terminated in the CN by transmission of the RELOCATION COMMAND message.

If the target system (including target CN) does not support all existing RABs, the RELOCATION COMMAND message shall contain a list of RABs indicating all the RABs that are not supported by the target system. This list is contained in the *RABs to Be Released* IE. The source RNC shall use this information to avoid transferring associated contexts where applicable and may use this information e.g. to decide if to cancel the relocation or not. The resources associated with these not supported RABs shall not be released until the relocation is completed. This is in order to make a return to the old configuration possible in case of a failed or cancelled relocation.

Upon reception of the RELOCATION COMMAND message the source RNC shall stop the timer  $T_{\text{RELOCprep}}$ , start the timer  $T_{\text{RELOCoverall}}$  and terminate the Relocation Preparation procedure. The source RNC is then defined to have a Prepared Relocation for that Iu signalling connection.

When the Relocation Preparation procedure is successfully terminated and when the source RNC is ready, the source RNC should trigger the execution of relocation of SRNS.

#### **Interactions with other procedures:**

If, after a RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a RANAP message initiating another connection oriented RANAP class 1 or class 3 procedure (except IU RELEASE COMMAND message, which shall be handled normally) via the same Iu signalling connection, the source RNC shall either:

1. cancel the Relocation Preparation procedure i.e. execute the Relocation Cancel procedure with an appropriate value for the *Cause* IE, e.g. "Interaction with other procedure", and after successful completion of the Relocation Cancel procedure, the source RNC shall continue the initiated RANAP procedure;

or

2. terminate the initiated RANAP procedure without any changes in UTRAN by sending the appropriate response message with the cause value "Relocation Triggered" to the CN. The source RNC shall then continue the relocation of SRNS.

If during the Relocation Preparation procedure the source RNC receives a DIRECT TRANSFER message it shall be handled normally in the uplink. In the downlink, it shall be handled normally up to the anticipated limit according to section 14.12.4.2 [10].

If during the Relocation Preparation procedure the source RNC receives connection oriented RANAP class 2 messages (with the exception of DIRECT TRANSFER message) it shall decide to either execute the procedure immediately or suspend it. In case the relocation is cancelled, the RNC shall resume any suspended procedures (if any).

After the Relocation Preparation procedure is successfully terminated, all RANAP messages (except IU RELEASE COMMAND message, which shall be handled normally) received via the same Iu signalling bearer shall be ignored by the source RNC.

## CHANGE REQUEST

⌘ **25.413 CR 731** ⌘ rev **2** ⌘ Current version: **5.10.0** ⌘

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

<b>Title:</b>	⌘ Correction of RANAP Containers and CRRM		
<b>Source:</b>	⌘ RAN3		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ 15/02/2005
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use <u>one</u> of the following releases:</i> <b>Ph2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6) <b>Rel-7</b> (Release 7)

<b>Reason for change:</b>	⌘ Missing text for the interpretation of the load information received. Erroneous text for inter-system container.
<b>Summary of change:</b>	⌘ Text added in relocation preparation and resource allocation procedures to interpret the load information when received. Text corrected in Inter-System Information Container and Cell Load Group Information.
	<p><u>Impact assessment towards the previous version of the specification (same release):</u></p> <p>This CR has isolated impact towards the previous version of the specification (same release).</p> <p>This CR has an impact under functional point of view.</p> <p>The impact can be considered isolated because it only affects the Relocation Preparation and the Relocation Resource Allocation procedures.</p>
<b>Consequences if not approved:</b>	⌘ Risk of erroneous use of RANAP containers and/or erroneous use of the load information received when CRRM used.

<b>Clauses affected:</b>	⌘ 8.7, 9.2.1.48, 9.2.1.49, 9.2.1.60						
<b>Other specs</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table> Other core specifications	Y	N	X		⌘ TS25.413 CR740	
Y	N						
X							

**affected:**

<input checked="" type="checkbox"/>	Test specifications
<input checked="" type="checkbox"/>	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:

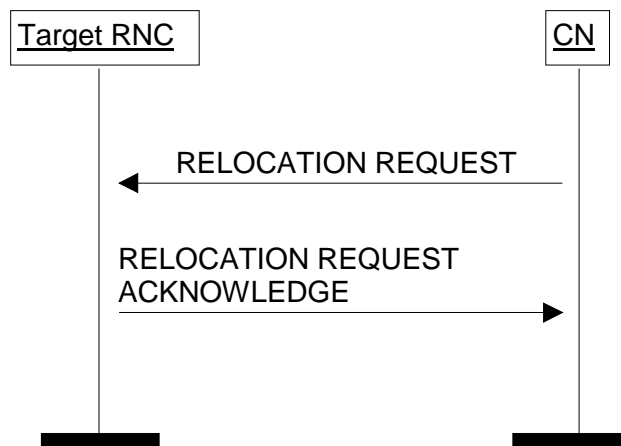
- 1) Fill out the above form. The symbols above marked ☹ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") 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.

## 8.7 Relocation Resource Allocation

### 8.7.1 General

The purpose of the Relocation Resource Allocation procedure is to allocate resources from a target RNS for a relocation of SRNS. The procedure shall be co-ordinated over all Iu signalling connections existing for the UE. The procedure uses connection oriented signalling.

### 8.7.2 Successful Operation



**Figure 7: Relocation Resource Allocation procedure. Successful operation.**

The CN initiates the procedure by generating a RELOCATION REQUEST message. In a UTRAN to UTRAN relocation, the message shall contain the information (if any) required by the UTRAN to build the same set of RABs as existing for the UE before the relocation. The CN may indicate that RAB QoS negotiation is allowed for certain RAB parameters and in some cases also which alternative values to be used in the negotiation.

When the CN transmits the RELOCATION REQUEST message, it shall start the timer  $T_{RELOCalloc}$ .

When a RELOCATION REQUEST message is sent from a CN node towards an RNC for which the sending CN node is not the default CN node, the *Global CN-ID* IE shall be included.

Upon reception of the RELOCATION REQUEST message, the target RNC shall initiate allocation of requested resources.

The RELOCATION REQUEST message shall contain the following IEs:

- *Permanent NAS UE Identity* IE (if available);
- *Cause* IE;
- *CN Domain Indicator* IE;
- *Source RNC To Target RNC Transparent Container* IE;
- *Iu Signalling Connection Identifier* IE;
- *Integrity Protection Information* IE (if available);
- *SNA Access Information* IE (if available);
- *UESBI-Iu* IE (if available).

For each RAB requested to relocate (or to be created e.g. in the case of inter-system handover), the message shall contain the following IEs:

- *RAB-ID* IE;

- *NAS Synchronisation Indicator IE* (if the relevant NAS information is provided by the CN);
- *RAB parameters IE*;
- *User Plane Information IE*;
- *Transport Layer Address IE*;
- *Iu Transport Association IE*;
- *Data Volume Reporting Indication IE* (only for PS);
- *PDP Type Information IE* (only for PS).

The RELOCATION REQUEST message may include the following IE:

- *Encryption Information IE* (shall not be included if the *Integrity Protection Information IE* is not included).

For each RAB requested to relocate the message may include the following IEs:

- *Service Handover IE*;
- *Alternative RAB Parameter Values IE*.

The following information elements received in RELOCATION REQUEST message require the same special actions in the RNC as specified for the same IEs in the RAB Assignment procedure:

- *RAB-ID IE*;
- *User plane Information IE* (i.e. required User Plane Mode and required User Plane Versions);
- *Priority level IE*, *Queuing Allowed IE*, *Pre-emption Capability IE* and *Pre-emption Vulnerability IE*;
- *Service Handover IE*.

The *SDU Format Information Parameter IE* in the *RAB Parameters IE* shall be present only if the *User Plane Mode IE* is set to "support mode for pre-defined SDU sizes" and the *Traffic Class IE* is set to either "Conversational" or "Streaming".

For a RAB setup, the *RAB Parameters IE* may contain the *Signalling Indication IE*. The *Signalling Indication IE* shall not be present if the *Traffic Class IE* is not set to "Interactive" or if the *CN Domain Indicator IE* is not set to "PS domain".

If the RELOCATION REQUEST message includes the Permanent NAS UE identity (i.e. IMSI), the RNC shall associate the permanent identity to the RRC Connection of that user and shall save it for the duration of the RRC connection.

If the RELOCATION REQUEST message includes the *PDP Type Information IE*, the UTRAN may use this IE to configure any compression algorithms.

The *Cause IE* shall contain the same value as the one received in the related RELOCATION REQUIRED message.

The *Iu Signalling Connection Identifier IE* contains an Iu signalling connection identifier which is allocated by the CN. The value for the *Iu Signalling Connection Identifier IE* shall be allocated so as to uniquely identify an Iu signalling connection for the involved CN node. The RNC shall store and remember this identifier for the duration of the Iu connection.

The RNC shall, if supported, use the *UESBI-Iu IE* when included in the RELOCATION REQUEST message.

The algorithms within the *Integrity Protection Information IE* and the *Encryption Information IE* shall be ordered in preferred order with the most preferred first in the list.

The *Permitted Encryption Algorithms IE* within the *Encryption Information IE* may contain "no encryption" within an element of its list in order to allow the RNC not to cipher the respective connection. This can be done either by not starting ciphering or by using the UEA0 algorithm. In the absence of the *Encryption Information IE*, the RNC shall not start ciphering.

In case of intra-system relocation, if no *Integrity Protection Key IE* (*Ciphering Key IE* respectively) is provided within the *Source RNC to Target RNC Transparent Container IE*, the target RNC shall not start integrity protection (ciphering respectively).

In case of intra-system relocation, when an *Ciphering Key IE* is provided within the *Source RNC to Target RNC Transparent Container IE*, the target RNC may select to use a ciphering alternative where an algorithm is used. It shall in this case make use of this key to cipher its signalling data whatever the selected algorithm. The *Encryption Key IE* that is contained within the *Encryption Information IE* of the RELOCATION REQUEST message shall never be considered for ciphering of signalling data.

In case of intra-system relocation, when an *Integrity Protection Key IE* is provided within the *Source RNC to Target RNC Transparent Container IE*, the target RNC shall select one integrity algorithm to start integrity and shall in this case make use of this key whatever the selected algorithm. The integrity protection key that is contained within the *Integrity Protection Information IE* of the RELOCATION REQUEST message shall never be considered.

In case of inter-system relocation, the integrity protection and ciphering information to be considered shall be the ones received in the *Integrity Protection Information IE* and *Encryption Information IE* of the RELOCATION REQUEST message.

The *Global CN-ID IE* contains the identity of the CN node that sent the RELOCATION REQUEST message, and it shall, if included, be stored together with the Iu signalling connection identifier. If the *Global CN-ID IE* is not included, the RELOCATION REQUEST message shall be considered as coming from the default CN node for the indicated CN domain.

The RELOCATION REQUEST message may contain the *Cell Load Group Information IE* in the *Source RNC to Target RNC Transparent Container IE*.

The following additional actions shall be executed in the target RNC during the Relocation Resource Allocation procedure:

If the *Relocation Type IE* is set to "UE involved in relocation of SRNS":

- The target RNC may accept a requested RAB only if the RAB can be supported by the target RNC.
- Other RABs shall be rejected by the target RNC in the RELOCATION REQUEST ACKNOWLEDGE message with an appropriate value in the *Cause IE*, e.g. "Unable to Establish During Relocation".
- The target RNC shall include information adapted to the resulting RAB configuration in the target to source RNC transparent container to be included in the RELOCATION REQUEST ACKNOWLEDGE message sent to the CN. If the target RNC supports triggering of the Relocation Detect procedure via the Iur interface, the RNC shall assign a d-RNTI for the context of the relocation and include it in the container. If two CNs are involved in the relocation of SRNS, the target RNC may, however, decide to send the container to only one CN.
- If any alternative RAB parameter values have been used when allocating the resources, these RAB parameter values shall be included in the RELOCATION REQUEST ACKNOWLEDGE message within the *Assigned RAB Parameter Values IE*.

If the *Relocation Type IE* is set to "UE not involved in relocation of SRNS":

- The target RNC may accept a RAB only if the radio bearer(s) for the RAB either exist(s) already and can be used for the RAB by the target RNC, or do(es) not exist before the relocation but can be established in order to support the RAB in the target RNC.
- If existing radio bearers are not related to any RAB that is accepted by the target RNC, the radio bearers shall be ignored during the relocation of SRNS and the radio bearers shall be released by the radio interface protocols after completion of relocation of SRNS.
- If any alternative RAB parameter values have been used when allocating the resources, these RAB parameter values shall be included in the RELOCATION REQUEST ACKNOWLEDGE message within the *Assigned RAB Parameter Values IE*. It should be noted that the usage of alternative RAB parameter values is not applicable to the UTRAN initiated relocation of type "UE not involved in relocation of SRNS".

After all necessary resources for accepted RABs including the initialised Iu user plane, are successfully allocated, the target RNC shall send a RELOCATION REQUEST ACKNOWLEDGE message to the CN.



For each RAB successfully setup the RNC shall include the following IEs:

- *RAB ID*
- *Transport Layer Address* (when no ALCAP has been used)
- *Iu Transport Association* (when no ALCAP has been used)

Two pairs of *Transport Layer Address* IE and *Iu Transport Association* IE may be included for RABs established towards the PS domain.

For each RAB the RNC is not able to setup during the Relocation Resource Allocation procedure, the RNC shall include the *RAB ID* IE and the *Cause* IE within the *RABs Failed To Setup* IE. The resources associated with the RABs indicated as failed to set up shall not be released in the CN until the relocation is completed. This is in order to make a return to the old configuration possible in case of a failed or cancelled relocation.

The RELOCATION REQUEST ACKNOWLEDGE message sent to the CN shall, if applicable and if not sent via the other CN domain, include the *Target RNC To Source RNC Transparent Container* IE. This container shall be transferred by the CN to the source RNC or the external relocation source while completing the Relocation Preparation procedure.

If the target RNC supports cell load-based inter-system handover, then in the case of inter-system handover, the *New BSS to Old BSS Information* IE may be included in the RELOCATION REQUEST ACKNOWLEDGE message. This information shall include, if available, the current traffic load in the target cell assuming a successful completion of the handover in progress.

In case of inter-system relocation, the RNC shall include the *Chosen Integrity Protection Algorithm* IE (*Chosen Encryption Algorithm* IE respectively) within the RELOCATION REQUEST ACKNOWLEDGE message, if, and only if the *Integrity Protection Information* IE (*Encryption Information* IE respectively) was included in the RELOCATION REQUEST message.

In case of intra-system relocation, the RNC shall include the *Chosen Integrity Protection Algorithm* IE (*Chosen Encryption Algorithm* IE respectively) within the RELOCATION REQUEST ACKNOWLEDGE message, if, and only if the *Integrity Protection Key* IE (*Ciphering Key* IE respectively) was included within the *Source RNC-to-Target RNC transparent container* IE.

If one or more of the RABs that the target RNC has decided to support can not be supported by the CN, then these failed RABs shall not be released towards the target RNC until the relocation is completed.

If the *NAS Synchronisation Indicator* IE is contained in the RELOCATION REQUEST message, the target RNC shall pass it to the UE.

If the *SNA Access Information* IE is contained in the RELOCATION REQUEST message, the target RNC shall store this information and use it to determine whether the UE has access to radio resources in the UTRAN. The target RNC shall consider that the UE is authorised to access only the PLMNs identified by the *PLMN identity* IE in the *SNA Access Information* IE. If the *Authorised SNAs* IE is included for a given PLMN (identified by the *PLMN identity* IE), then the target RNC shall consider that the access to radio resources for the concerned UE is restricted to the LAs contained in the SNAs identified by the *SNAC* IEs.

If the *SNA Access Information* IE is not contained in the RELOCATION REQUEST message, the target RNC shall consider that no access restriction applies to the UE in the UTRAN.

Transmission and reception of a RELOCATION REQUEST ACKNOWLEDGE message terminate the procedure in the UTRAN and in the CN respectively.

Before reporting the successful outcome of the Relocation Resource allocation procedure, the RNC shall have executed the initialisation of the user plane mode as requested by the CN in the *User Plane Mode* IE. If the RNC can not initialise the requested user plane mode for any of the user plane mode versions in the *UP Mode Versions* IE according to the rules for initialisation of the respective user plane mode versions, as described in [6], the RAB Relocation shall fail with the cause value "RNC unable to establish all RFCs".

### 9.2.1.48 Inter-System Information Transparent Container

The *Inter-System Information Transparent Container* IE is an information element that is produced by [the external relocation](#) target system **BSC/RNC** and is transmitted to a source ~~system~~-RNC/BSC. This IE is transparent to the CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Downlink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Downlink
Uplink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Uplink

### 9.2.1.49 Cell Load Information

The *Cell Load Information* IE contains the load information of a specific (serving or target) cell for either the Downlink or the Uplink. [If the RNC supports cell load-based inter-system handover, this information shall be understood, when available, as the current traffic load in the target cell assuming a successful completion of the handover in progress.](#)

IE/Group Name	Presence	Range	IE type and reference	Semantics description
<b>Cell Load Information</b>				
> Cell Capacity Class Value	M		9.2.1.50	
> Load Value	M		9.2.1.51	
> RT Load Value	O		9.2.1.52	
> NRT Load Information Value	O		9.2.1.53	

### 9.2.1.60 Cell Load Information Group

The *Cell Load Information Group* IE is an information element that is produced by [external relocation](#) source system **BSC/RNC** and is transmitted to target system RNC/BSC via ~~existing~~-transparent containers. This IE contains the load information of the source cell for either the Downlink or the Uplink or both as well as the source cell identifier the included cell load information corresponds to. [If the RNC supports cell load-based inter-system handover, this information shall be understood, when available, as the current traffic load in the indicated source cell prior to the relocation.](#)

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell Load Information Group				
>Source Cell Identifier	M		9.2.1.61	The source cell identifier the downlink and uplink cell load information correspond to.
>Downlink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Downlink
>Uplink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Uplink



## CHANGE REQUEST

⌘ **25.413 CR 740** ⌘ rev **1** ⌘ Current version: **6.4.1** ⌘

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

<b>Title:</b>	⌘ Correction of RANAP Containers and CRRM		
<b>Source:</b>	⌘ RAN3		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ 15/02/2005
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-6
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: Ph2 (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) Rel-7 (Release 7)

<b>Reason for change:</b>	⌘ Missing text for the interpretation of the load information received. Erroneous text for inter-system container.
<b>Summary of change:</b>	⌘ Text added in relocation preparation and resource allocation procedures to interpret the load information when received. Text corrected in Inter-System Information Container and Cell Load Group Information.  <u>Impact assessment towards the previous version of the specification (same release):</u>  This CR has isolated impact towards the previous version of the specification (same release).  This CR has an impact under functional point of view.  The impact can be considered isolated because it only affects the Relocation Preparation and the Relocation Resource Allocation procedures.
<b>Consequences if not approved:</b>	⌘ Risk of erroneous use of RANAP containers and/or erroneous use of the load information received when CRRM used.

<b>Clauses affected:</b>	⌘ 8.7, 9.2.1.48, 9.2.1.49, 9.2.1.60						
<b>Other specs</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table> Other core specifications	Y	N	X		⌘ TS25.413 CR731	
Y	N						
X							

**affected:**

<input checked="" type="checkbox"/>	Test specifications
<input checked="" type="checkbox"/>	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:

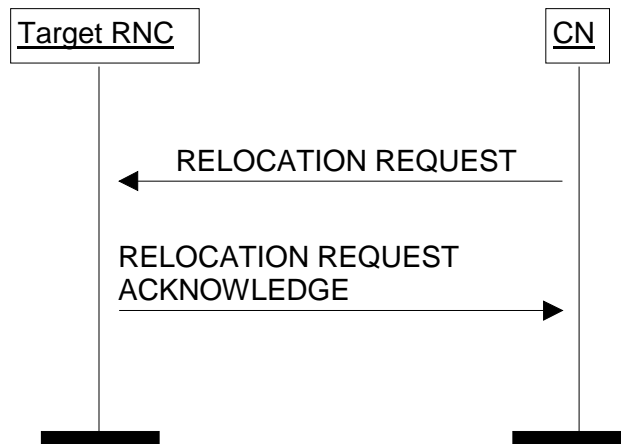
- 1) Fill out the above form. The symbols above marked ☹ contain pop-up help information about the field that they are closest to.
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## 8.7 Relocation Resource Allocation

### 8.7.1 General

The purpose of the Relocation Resource Allocation procedure is to allocate resources from a target RNS for a relocation of SRNS. The procedure shall be co-ordinated over all Iu signalling connections existing for the UE. The procedure uses connection oriented signalling.

### 8.7.2 Successful Operation



**Figure 7: Relocation Resource Allocation procedure. Successful operation.**

The CN initiates the procedure by generating a RELOCATION REQUEST message. In a UTRAN to UTRAN relocation, the message shall contain the information (if any) required by the UTRAN to build the same set of RABs as existing for the UE before the relocation. The CN may indicate that RAB QoS negotiation is allowed for certain RAB parameters and in some cases also which alternative values to be used in the negotiation.

When the CN transmits the RELOCATION REQUEST message, it shall start the timer  $T_{RELOCalloc}$ .

When a RELOCATION REQUEST message is sent from a CN node towards an RNC for which the sending CN node is not the default CN node, the *Global CN-ID* IE shall be included.

Upon reception of the RELOCATION REQUEST message, the target RNC shall initiate allocation of requested resources.

The RELOCATION REQUEST message shall contain the following IEs:

- *Permanent NAS UE Identity* IE (if available);
- *Cause* IE;
- *CN Domain Indicator* IE;
- *Source RNC To Target RNC Transparent Container* IE;
- *Iu Signalling Connection Identifier* IE;
- *Integrity Protection Information* IE (if available);
- *SNA Access Information* IE (if available);
- *UESBI-Iu* IE (if available);
- *Selected PLMN ID* IE if in MOCN or GWCN configuration;
- *CN MBMS Linking Information* IE (if available).

For each RAB requested to relocate (or to be created e.g. in the case of inter-system handover), the message shall contain the following IEs:

- *RAB-ID* IE;
- *NAS Synchronisation Indicator* IE (if the relevant NAS information is provided by the CN);
- *RAB parameters* IE;
- *User Plane Information* IE;
- *Transport Layer Address* IE;
- *Iu Transport Association* IE;
- *Data Volume Reporting Indication* IE (only for PS);
- *PDP Type Information* IE (only for PS).

The RELOCATION REQUEST message may include the following IE:

- *Encryption Information* IE (shall not be included if the *Integrity Protection Information* IE is not included).

For each RAB requested to relocate the message may include the following IEs:

- *Service Handover* IE;
- *Alternative RAB Parameter Values* IE.

The following information elements received in RELOCATION REQUEST message require the same special actions in the RNC as specified for the same IEs in the RAB Assignment procedure:

- *RAB-ID* IE;
- *User plane Information* IE (i.e. required User Plane Mode and required User Plane Versions);
- *Priority level* IE, *Queuing Allowed* IE, *Pre-emption Capability* IE and *Pre-emption Vulnerability* IE;
- *Service Handover* IE.

The *SDU Format Information Parameter* IE in the *RAB Parameters* IE shall be present only if the *User Plane Mode* IE is set to "support mode for pre-defined SDU sizes" and the *Traffic Class* IE is set to either "Conversational" or "Streaming".

For a RAB setup, the *RAB Parameters* IE may contain the *Signalling Indication* IE. The *Signalling Indication* IE shall not be present if the *Traffic Class* IE is not set to "Interactive" or if the *CN Domain Indicator* IE is not set to "PS domain".

If the RELOCATION REQUEST message includes the Permanent NAS UE identity (i.e. IMSI), the RNC shall associate the permanent identity to the RRC Connection of that user and shall save it for the duration of the RRC connection.

If the RELOCATION REQUEST message includes the *PDP Type Information* IE, the UTRAN may use this IE to configure any compression algorithms.

The *Cause* IE shall contain the same value as the one received in the related RELOCATION REQUIRED message.

The *Iu Signalling Connection Identifier* IE contains an Iu signalling connection identifier which is allocated by the CN. The value for the *Iu Signalling Connection Identifier* IE shall be allocated so as to uniquely identify an Iu signalling connection for the involved CN node. The RNC shall store and remember this identifier for the duration of the Iu connection.

The RNC shall, if supported, use the *UESBI-Iu* IE when included in the RELOCATION REQUEST message.

If the *CN MBMS Linking Information* IE is included in the RELOCATION REQUEST message, the RNC shall, if supported, use the *CN MBMS Linking Information* IE to perform suitable UE linking as described in [42].

The algorithms within the *Integrity Protection Information IE* and the *Encryption Information IE* shall be ordered in preferred order with the most preferred first in the list.

The *Permitted Encryption Algorithms IE* within the *Encryption Information IE* may contain "no encryption" within an element of its list in order to allow the RNC not to cipher the respective connection. This can be done either by not starting ciphering or by using the UEA0 algorithm. In the absence of the *Encryption Information IE*, the RNC shall not start ciphering.

In case of intra-system relocation, if no *Integrity Protection Key IE* (*Ciphering Key IE* respectively) is provided within the *Source RNC to Target RNC Transparent Container IE*, the target RNC shall not start integrity protection (ciphering respectively).

In case of intra-system relocation, when an *Ciphering Key IE* is provided within the *Source RNC to Target RNC Transparent Container IE*, the target RNC may select to use a ciphering alternative where an algorithm is used. It shall in this case make use of this key to cipher its signalling data whatever the selected algorithm. The *Encryption Key IE* that is contained within the *Encryption Information IE* of the RELOCATION REQUEST message shall never be considered for ciphering of signalling data.

In case of intra-system relocation, when an *Integrity Protection Key IE* is provided within the *Source RNC to Target RNC Transparent Container IE*, the target RNC shall select one integrity algorithm to start integrity and shall in this case make use of this key whatever the selected algorithm. The integrity protection key that is contained within the *Integrity Protection Information IE* of the RELOCATION REQUEST message shall never be considered.

In case of intra-system relocation, when a *Trace Recording Session Information IE* is provided within the *Source RNC to Target RNC Transparent Container IE*, the Target RNC should store that information to include it in a potential future Trace Record for that UE.

In case of inter-system relocation, the integrity protection and ciphering information to be considered shall be the ones received in the *Integrity Protection Information IE* and *Encryption Information IE* of the RELOCATION REQUEST message.

The *Global CN-ID IE* contains the identity of the CN node that sent the RELOCATION REQUEST message, and it shall, if included, be stored together with the Iu signalling connection identifier. If the *Global CN-ID IE* is not included, the RELOCATION REQUEST message shall be considered as coming from the default CN node for the indicated CN domain.

[The RELOCATION REQUEST message may contain the Cell Load Group Information IE in the Source RNC to Target RNC Transparent Container IE.](#)

The following additional actions shall be executed in the target RNC during the Relocation Resource Allocation procedure:

If the *Relocation Type IE* is set to "UE involved in relocation of SRNS":

- The target RNC may accept a requested RAB only if the RAB can be supported by the target RNC.
- Other RABs shall be rejected by the target RNC in the RELOCATION REQUEST ACKNOWLEDGE message with an appropriate value in the *Cause IE*, e.g. "Unable to Establish During Relocation".
- The target RNC shall include information adapted to the resulting RAB configuration in the target to source RNC transparent container to be included in the RELOCATION REQUEST ACKNOWLEDGE message sent to the CN. If the target RNC supports triggering of the Relocation Detect procedure via the Iur interface, the RNC shall assign a d-RNTI for the context of the relocation and include it in the container. If two CNs are involved in the relocation of SRNS, the target RNC may, however, decide to send the container to only one CN.
- If any alternative RAB parameter values have been used when allocating the resources, these RAB parameter values shall be included in the RELOCATION REQUEST ACKNOWLEDGE message within the *Assigned RAB Parameter Values IE*.

If the *Relocation Type IE* is set to "UE not involved in relocation of SRNS":

- The target RNC may accept a RAB only if the radio bearer(s) for the RAB either exist(s) already and can be used for the RAB by the target RNC, or do(es) not exist before the relocation but can be established in order to support the RAB in the target RNC.



- If existing radio bearers are not related to any RAB that is accepted by the target RNC, the radio bearers shall be ignored during the relocation of SRNS and the radio bearers shall be released by the radio interface protocols after completion of relocation of SRNS.
- If any alternative RAB parameter values have been used when allocating the resources, these RAB parameter values shall be included in the RELOCATION REQUEST ACKNOWLEDGE message within the *Assigned RAB Parameter Values* IE. It should be noted that the usage of alternative RAB parameter values is not applicable to the UTRAN initiated relocation of type "UE not involved in relocation of SRNS".

After all necessary resources for accepted RABs including the initialised Iu user plane, are successfully allocated, the target RNC shall send a RELOCATION REQUEST ACKNOWLEDGE message to the CN.

For each RAB successfully setup the RNC shall include the following IEs:

- *RAB ID*
- *Transport Layer Address* (when no ALCAP has been used)
- *Iu Transport Association* (when no ALCAP has been used)

Two pairs of *Transport Layer Address* IE and *Iu Transport Association* IE may be included for RABs established towards the PS domain.

For each RAB the RNC is not able to setup during the Relocation Resource Allocation procedure, the RNC shall include the *RAB ID* IE and the *Cause* IE within the *RABs Failed To Setup* IE. The resources associated with the RABs indicated as failed to set up shall not be released in the CN until the relocation is completed. This is in order to make a return to the old configuration possible in case of a failed or cancelled relocation.

The RELOCATION REQUEST ACKNOWLEDGE message sent to the CN shall, if applicable and if not sent via the other CN domain, include the *Target RNC To Source RNC Transparent Container* IE. This container shall be transferred by the CN to the source RNC or the external relocation source while completing the Relocation Preparation procedure.

If the target RNC supports cell load-based inter-system handover, then in the case of inter-system handover, the *New BSS to Old BSS Information* IE may be included in the RELOCATION REQUEST ACKNOWLEDGE message. This information shall include, if available, the current traffic load in the target cell assuming a successful completion of the handover in progress.

In case of inter-system relocation, the RNC shall include the *Chosen Integrity Protection Algorithm* IE (*Chosen Encryption Algorithm* IE respectively) within the RELOCATION REQUEST ACKNOWLEDGE message, if, and only if the *Integrity Protection Information* IE (*Encryption Information* IE respectively) was included in the RELOCATION REQUEST message.

In case of intra-system relocation, the RNC shall include the *Chosen Integrity Protection Algorithm* IE (*Chosen Encryption Algorithm* IE respectively) within the RELOCATION REQUEST ACKNOWLEDGE message, if, and only if the *Integrity Protection Key* IE (*Ciphering Key* IE respectively) was included within the *Source RNC-to-Target RNC transparent container* IE.

If one or more of the RABs that the target RNC has decided to support can not be supported by the CN, then these failed RABs shall not be released towards the target RNC until the relocation is completed.

If the *NAS Synchronisation Indicator* IE is contained in the RELOCATION REQUEST message, the target RNC shall pass it to the UE.

If the *SNA Access Information* IE is contained in the RELOCATION REQUEST message, the target RNC shall store this information and use it to determine whether the UE has access to radio resources in the UTRAN. The target RNC shall consider that the UE is authorised to access only the PLMNs identified by the *PLMN identity* IE in the *SNA Access Information* IE. If the *Authorised SNAs* IE is included for a given PLMN (identified by the *PLMN identity* IE), then the target RNC shall consider that the access to radio resources for the concerned UE is restricted to the LAs contained in the SNAs identified by the *SNAC* IEs.

If the *SNA Access Information* IE is not contained in the RELOCATION REQUEST message, the target RNC shall consider that no access restriction applies to the UE in the UTRAN.

Transmission and reception of a RELOCATION REQUEST ACKNOWLEDGE message terminate the procedure in the UTRAN and in the CN respectively.

Before reporting the successful outcome of the Relocation Resource allocation procedure, the RNC shall have executed the initialisation of the user plane mode as requested by the CN in the *User Plane Mode* IE. If the RNC can not initialise the requested user plane mode for any of the user plane mode versions in the *UP Mode Versions* IE according to the rules for initialisation of the respective user plane mode versions, as described in [6], the RAB Relocation shall fail with the cause value "RNC unable to establish all RFCs".

If the *Selected PLMN ID* IE is contained in the RELOCATION REQUEST message, the target RNC shall use this information to send it to the UE.

### 9.2.1.48 Inter-System Information Transparent Container

The *Inter-System Information Transparent Container* IE is an information element that is produced by [the external relocation](#) target system **BSC/RNC** and is transmitted to a source ~~system~~-RNC/**BSC**. This IE is transparent to the CN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Downlink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Downlink
Uplink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Uplink

### 9.2.1.49 Cell Load Information

The *Cell Load Information* IE contains the load information of a specific (serving or target) cell for either the Downlink or the Uplink. [If the RNC supports cell load-based inter-system handover, this information shall be understood, when available, as the current traffic load in the target cell assuming a successful completion of the handover in progress.](#)

IE/Group Name	Presence	Range	IE type and reference	Semantics description
<b>Cell Load Information</b>				
> Cell Capacity Class Value	M		9.2.1.50	
> Load Value	M		9.2.1.51	
> RT Load Value	O		9.2.1.52	
> NRT Load Information Value	O		9.2.1.53	

### 9.2.1.60 Cell Load Information Group

The *Cell Load Information Group* IE is an information element that is produced by source system BSC/~~RNC~~ and is transmitted to target system RNC/~~BSC~~ via ~~existing~~-transparent containers. This IE contains the load information of the source cell for either the Downlink or the Uplink or both as well as the source cell identifier the included cell load information corresponds to. If the RNC supports cell load-based inter-system handover, this information shall be understood, when available, as the current traffic load in the indicated source cell prior to the relocation.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell Load Information Group				
>Source Cell Identifier	M		9.2.1.61	The source cell identifier the downlink and uplink cell load information correspond to.
>Downlink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Downlink
>Uplink Cell Load Information	O		Cell Load Information 9.2.1.49	For the Uplink

3GPP TSG-RAN WG3 #46  
 Phoenix, USA, 14<sup>th</sup> February – 18 February 2005

⌘ **R3-050358**

CR-Form-v7.1
<b>CHANGE REQUEST</b>
⌘ <b>25.415 CR 122</b> ⌘ rev <b>3</b> ⌘ Current version: <b>5.4.0</b> ⌘

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

<b>Title:</b>	⌘ Negative Acknowledgment of Init Procedure
<b>Source:</b>	⌘ RAN3
<b>Work item code:</b>	⌘ TEI5
	<b>Date:</b> ⌘ 14/02/2005
<b>Category:</b>	⌘ <b>F</b>
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .
	<b>Release:</b> ⌘ Rel-5 Use <u>one</u> of the following releases: Ph2 (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) Rel-7 (Release 7)

<b>Reason for change:</b>	⌘ The sender shall indicate in the init frame the subset of the versions it proposes of the subset of supported versions of the versions indicated in the RAB Assignment message. Second: Incomplete condition statement to send a positive acknowledgment. Third: the sender of the Init frame can be not only the RNC but also the MGW.
<b>Summary of change:</b>	⌘ The versions to be indicated in the Init frame have been changed. The condition for sending a positive ack has been completed. The sender identity has been corrected.  <u>Impact assessment towards the previous version of the specification (same release):</u>  This CR has isolated impact towards the previous version of the specification (same release).  This CR has an impact under protocol and functional point of view.  The impact can be considered isolated because it only affects the Initialisation procedure.
<b>Consequences if not approved:</b>	⌘ IOT issues and impaired implementations expected if Init frame contains always supported versions instead of proposed versions. Also positive ack used instead of negative ack.

<b>Clauses affected:</b>	⌘	6.5.2, 6.6.3.25, 6.6.3.26										
<b>Other specs affected:</b>	⌘	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ TS25.415 CR123
		Y	N									
		X										
	X											
	X											
		Test specifications										
		O&M Specifications										
<b>Other comments:</b>	⌘											

### 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.

## 6.5.2 Initialisation procedure

### 6.5.2.1 Successful operation

This procedure is mandatory for RABs using the support mode for predefined SDU size. The purpose of the Initialisation procedure is to configure both termination points of the Iu UP with RAB Subflows Combinations, RFCIs, and associated RAB Sub Flows SDU sizes necessary to be supported during the transfer of user data phase.

Additional parameters may also be passed, such as the Inter PDU Timing Interval (IPTI) information.

The Initialisation procedure may be controlled at both end of the Iu access point, i.e. the CN and UTRAN.

The Initialisation procedure is invoked whenever indicated by the Iu UP Procedure Control function e.g. as a result of a relocation of SRNS or at RAB establishment over Iu or if the CN decides to resolve RFCI mismatch in case of TrFO (see [13]). The Initialisation procedure shall not be re-invoked by the SRNC for the RAB without a RAB modification requested via RANAP [3].

When this procedure is invoked all other Iu UP procedures are suspended until termination of the Initialisation procedure.

The Iu UP protocol entity invoking this procedure shall indicate the Iu UP Mode version [of the INITIALISATION control frame](#) it uses ~~for the initialisation in the Iu UP Mode Version field. It shall also indicate as well as~~ the Iu UP Mode versions it ~~proposes~~[supports for the related RAB](#) among the versions the CN requested for the related RAB ~~and which it supports in the Iu UP Mode Versions Supported field~~. The sender should use the lowest [Iu UP Mode](#) version for the initialisation that has enough information to initialise the highest proposed protocol version.

The invoking entity allocates a RAB sub-Flow Combination indicator (RFCI) to each RAB sub-Flow Combination it initialises. One requirement on which RAB sub-Flow Combinations to initialise, is that all requested compound RAB sub-Flow Combination SDU sizes shall be configured, except in the case when also version 1 of the user plane mode was included as an alternative in the request over RANAP. In that case, it is allowed to initialise just a subset of the requested RAB sub-Flow Combinations. The association of indicators to RAB Flow Combinations is valid for both the uplink and downlink direction in the Iu UP until a new Initialisation procedure is performed or the connection is terminated.

The Procedure Control function may also generate additional Iu UP protocol parameters necessary for the RAB service to operate properly over Iu.

To each RAB sub-Flow combination indicator is associated the size of each RAB sub-Flow SDU of that combination. The list of RAB sub-Flow Combination Indicators and their respective SDU sizes constitutes the RAB sub-Flow Combination set passed over the Iu UP in the INITIALISATION control frame i.e. into an appropriate Iu UP PDU Type.

The first RAB Sub-flow Combination proposed in the list of RAB Sub-Flow Combinations corresponds to the maximum bit rate allowed to be used when starting the communication phase i.e. until the first RATE CONTROL control frame occurs. The RAB Sub-flow Combinations for rates below the guaranteed bit rate as specified in the RAB parameters (indicated to the Iu-UP at the RNC) shall not be used as the first RAB Sub-flow Combination in the proposed list of RAB Sub-Flow Combinations.

Any RAB Sub-Flow Combination of the set that is initialised shall be supported by the two Iu UP termination points and may optionally be used by the sender (except for the first in the list that shall be used when starting). In particular, the use by the sender of the RFC "NO\_DATA" is optional even when it is included in the Initialisation procedure.

Conversely, any RAB Sub-Flow Combination that is not part of the initialised set shall not be used even if supported. In particular, the two Iu UP termination points shall be capable of operating without the use of the RFC "NO\_DATA".

The complete set of information is framed by the Iu UP Frame Handler function and transferred in an Iu UP INITIALISATION control frame. If needed, the INITIALISATION control frame CRC is calculated and set accordingly in the respective frame field.

A supervision timer  $T_{INIT}$  is started after sending the Iu UP INITIALISATION control frame. This timer supervises the reception of the initialisation acknowledgement frame.

Upon reception of a frame indicating that an Initialisation procedure is active in the peer Iu UP entity, the Iu UP protocol layer forwards the whole protocol information contained in the INITIALISATION control frame to the upper layers. It also stores the RAB sub-Flow Combination set (and thus replaces a possible previous set) in order to control during the transfer of user data, that the Iu UP payload is correctly formatted (e.g. RFCI matches the expected Iu UP frame payload total length). The peer Iu UP entity receiving the INITIALISATION control frame shall choose a version that it supports among the proposed versions indicated by the sender, ~~which is among a set of required versions and~~ for which the peer Iu UP entity has enough initialisation information.

If the INITIALISATION control frame is correctly formatted and treated by the receiving Iu UP protocol layer, and at least one of the proposed versions is supported, this latter sends an ~~initialisation acknowledgement~~ INITIALISATION POSITIVE ACKNOWLEDGEMENT frame using the version of the Iu UP Mode that is chosen.

Upon reception of an initialisation acknowledgement frame, the Iu UP protocol layer in the SRNC stops the supervision timer  $T_{INIT}$ .

If the Initialisation procedure requires that several frames are to be sent, each frame shall be acknowledged individually (i.e. any frame to be sent shall wait for the acknowledgement of the previous sent frame to be received before being sent. The supervision timer shall be used individually for each frame being sent.

The successful operation of the Initialisation procedure may require that one or several chained frames are positively acknowledged. The number of INITIALISATION control frames in such a chain shall not exceed 4. Each chained frame shall be positively acknowledged before the one with the next frame number can be sent.

The *Frame Number* IE of an INITIALISATION control frame shall always be set to "0" when the chain has only one frame. When several INITIALISATION control frames are used in a chain the *Frame Number* IE shall be set to "0" for the first one and incremented by one in the sending direction for each new frame in the chain. The positive acknowledgement or negative acknowledgement shall carry the frame number of the frame being acknowledged.

Upon reception of an INITIALISATION NEGATIVE ACKNOWLEDGEMENT control frame, an erroneous acknowledgement or at timer  $T_{INIT}$  expiry, the Iu UP protocol entity controlling the Initialisation procedure shall reset and restart the  $T_{INIT}$  supervision timer and repeat one INITIALISATION control frame with the same frame number. The repetition shall be performed up to  $N_{INIT}$  times,  $N_{INIT}$  being chosen by the operator (default  $N_{INIT} = 3$ ). The  $N_{INIT}$  (maximum number of allowed repetition) is the aggregate count for each frame in the chain and is restart each time a frame is positively acknowledged.

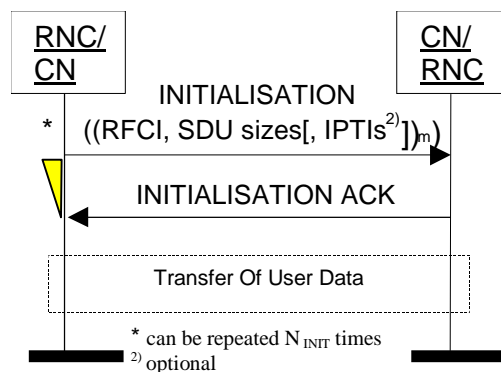


Figure 9: Successful Initialisation of Iu UP for m RFCIs

### 6.5.2.2 Unsuccessful operation

If the INITIALISATION control frame is incorrectly formatted and cannot be correctly treated by the receiving Iu UP protocol layer, this latter sends an INITIALISATION NEGATIVE ACKNOWLEDGEMENT control frame.

If the receiver does not support the Iu UP Mode version used for the Initialisation procedure, it shall send a negative acknowledgement using the highest version it supports among the versions proposed by the sender. If none of the proposed versions are supported, the receiver shall respond with a negative acknowledgement using the highest version it supports.

After  $N_{INIT}$  successive negative acknowledgment, erroneous acknowledgment or  $T_{INIT}$  expiry for INITIALISATION control frames having the same frame number, the Initialisation procedure is unsuccessfully terminated and the Iu UP protocol layers in RNC take appropriate local actions.



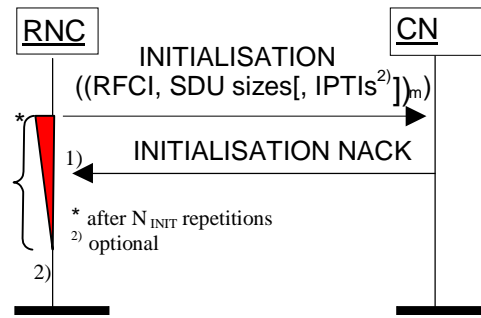


Figure 10: Unsuccessful initialization of Iu UP: 1) N<sub>INIT</sub> negative acknowledgement or 2) N<sub>INIT</sub> expires of timer T<sub>INIT</sub>

### 6.6.3.25 Iu UP Mode versions supported

**Description:** This field indicates the Iu UP Mode Versions ~~supported~~proposed by the ~~sender~~RNC for the related RAB for the initialisation procedure. Up to 16 Iu UP Mode versions can be simultaneously indicated.

**Value range:**

Each bit, in the two octet field, indicates a Iu UP Protocol version: (First octet, bit 7) indicates version 16, (Second octet, bit 0) indicates version 1.

Bit = 0 means "Version not supported, ~~or~~ not allowed or not proposed"

Bit = 1 means "Version supported among the required versions and proposed"

**Field length:** 2 octets

### 6.6.3.26 Iu UP Mode Version

**Description:** This field indicates the Iu UP Mode version used for type 14 frames. Up to 16 Iu UP Mode Versions can be ~~simultaneously~~ available.

**Value range:** {1-16} The binary coded value is the version number minus 1 (e.g. version 1 is coded "0000", ..., version 16 is coded "1111").

**Field length:** 4 bits

3GPP TSG-RAN WG3 #46  
 Phoenix, USA, 14<sup>th</sup> February – 18 February 2005

⌘ **R3-050341**

CR-Form-v7.1
<b>CHANGE REQUEST</b>
⌘ <b>25.415 CR 123</b> ⌘ rev <b>2</b> ⌘ Current version: <b>6.1.0</b> ⌘

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

<b>Title:</b>	⌘ Negative Acknowledgment of the Init Procedure
<b>Source:</b>	⌘ RAN3
<b>Work item code:</b>	⌘ TEI5 <span style="float: right;"><b>Date:</b> ⌘ 14/02/2005</span>
<b>Category:</b>	⌘ <b>A</b> <span style="float: right;"><b>Release:</b> ⌘ Rel-6</span> Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .
	Use <u>one</u> of the following releases: Ph2 (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) Rel-7 (Release 7)

<b>Reason for change:</b>	⌘ The sender shall indicate in the init frame the versions it proposes and not the versions it supports. Second: Incomplete condition statement to send a positive acknowledgment. Third: the sender of the Init frame can be not only the RNC but also the MGW.
<b>Summary of change:</b>	⌘ The versions to be indicated in the Init frame have been changed. The condition for sending a positive ack has been completed. The sender identity has been corrected.  <u>Impact assessment towards the previous version of the specification (same release):</u>  This CR has isolated impact towards the previous version of the specification (same release).  This CR has an impact under protocol and functional point of view.  The impact can be considered isolated because it only affects the Initialisation procedure.
<b>Consequences if not approved:</b>	⌘ IOT issues and impaired implementations expected if Init frame contains always supported versions instead of proposed versions. Also positive ack used instead of negative ack.

<b>Clauses affected:</b>	⌘ 6.5.2, 6.6.3.25, 6.6.3.26
--------------------------	-----------------------------

<b>Other specs affected:</b>		<b>Y</b>	<b>N</b>		
	⌘	<b>X</b>		Other core specifications	⌘ TS25.415 CR122
			<b>X</b>	Test specifications	
			<b>X</b>	O&M Specifications	
<b>Other comments:</b>	⌘				

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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.

## 6.5.2 Initialisation procedure

### 6.5.2.1 Successful operation

This procedure is mandatory for RABs using the support mode for predefined SDU size. The purpose of the Initialisation procedure is to configure both termination points of the Iu UP with RAB Subflows Combinations, RFCIs, and associated RAB Sub Flows SDU sizes necessary to be supported during the transfer of user data phase.

Additional parameters may also be passed, such as the Inter PDU Timing Interval (IPTI) information.

The Initialisation procedure may be controlled at both end of the Iu access point, i.e. the CN and UTRAN.

The Initialisation procedure is invoked whenever indicated by the Iu UP Procedure Control function e.g. as a result of a relocation of SRNS or at RAB establishment over Iu or if the CN decides to resolve RFCI mismatch in case of TrFO (see [13]). The Initialisation procedure shall not be re-invoked by the SRNC for the RAB without a RAB modification requested via RANAP [3].

When this procedure is invoked all other Iu UP procedures are suspended until termination of the Initialisation procedure.

The Iu UP protocol entity invoking this procedure shall indicate the Iu UP Mode version [of the INITIALISATION control frame](#) it uses ~~for the initialisation in the Iu UP Mode Version field. It shall also indicate as well as~~ the Iu UP Mode versions it ~~proposes supports for the related RAB~~ among the versions the CN requested for the related RAB ~~and which it supports in the Iu UP Mode Versions Supported field~~. The sender should use the lowest [Iu UP Mode](#) version for the initialisation that has enough information to initialise the highest proposed protocol version.

The invoking entity allocates a RAB sub-Flow Combination indicator (RFCI) to each RAB sub-Flow Combination it initialises. One requirement on which RAB sub-Flow Combinations to initialise, is that all requested compound RAB sub-Flow Combination SDU sizes shall be configured, except in the case when also version 1 of the user plane mode was included as an alternative in the request over RANAP. In that case, it is allowed to initialise just a subset of the requested RAB sub-Flow Combinations. The association of indicators to RAB Flow Combinations is valid for both the uplink and downlink direction in the Iu UP until a new Initialisation procedure is performed or the connection is terminated.

The Procedure Control function may also generate additional Iu UP protocol parameters necessary for the RAB service to operate properly over Iu.

To each RAB sub-Flow combination indicator is associated the size of each RAB sub-Flow SDU of that combination. The list of RAB sub-Flow Combination Indicators and their respective SDU sizes constitutes the RAB sub-Flow Combination set passed over the Iu UP in the INITIALISATION control frame i.e. into an appropriate Iu UP PDU Type.

The first RAB Sub-flow Combination proposed in the list of RAB Sub-Flow Combinations corresponds to the maximum bit rate allowed to be used when starting the communication phase i.e. until the first RATE CONTROL control frame occurs. The RAB Sub-flow Combinations for rates below the guaranteed bit rate as specified in the RAB parameters (indicated to the Iu-UP at the RNC) shall not be used as the first RAB Sub-flow Combination in the proposed list of RAB Sub-Flow Combinations.

Any RAB Sub-Flow Combination of the set that is initialised shall be supported by the two Iu UP termination points and may optionally be used by the sender (except for the first in the list that shall be used when starting). In particular, the use by the sender of the RFC "NO\_DATA" is optional even when it is included in the Initialisation procedure.

Conversely, any RAB Sub-Flow Combination that is not part of the initialised set shall not be used even if supported. In particular, the two Iu UP termination points shall be capable of operating without the use of the RFC "NO\_DATA".

The complete set of information is framed by the Iu UP Frame Handler function and transferred in an Iu UP INITIALISATION control frame. If needed, the INITIALISATION control frame CRC is calculated and set accordingly in the respective frame field.

A supervision timer  $T_{INIT}$  is started after sending the Iu UP INITIALISATION control frame. This timer supervises the reception of the initialisation acknowledgement frame.

Upon reception of a frame indicating that an Initialisation procedure is active in the peer Iu UP entity, the Iu UP protocol layer forwards the whole protocol information contained in the INITIALISATION control frame to the upper layers. It also stores the RAB sub-Flow Combination set (and thus replaces a possible previous set) in order to control during the transfer of user data, that the Iu UP payload is correctly formatted (e.g. RFCI matches the expected Iu UP frame payload total length). The peer Iu UP entity receiving the INITIALISATION control frame shall choose a version that it supports among the proposed versions indicated by the sender, ~~which is among a set of required versions and~~ for which the peer Iu UP entity has enough initialisation information.

If the INITIALISATION control frame is correctly formatted and treated by the receiving Iu UP protocol layer, and at least one of the proposed versions is supported, this latter sends an INITIALISATION POSITIVE ACKNOWLEDGEMENT ~~initialisation acknowledgement~~ frame using the version of the Iu UP Mode that is chosen.

Upon reception of an initialisation acknowledgement frame, the Iu UP protocol layer in the SRNC stops the supervision timer  $T_{INIT}$ .

If the Initialisation procedure requires that several frames are to be sent, each frame shall be acknowledged individually (i.e. any frame to be sent shall wait for the acknowledgement of the previous sent frame to be received before being sent). The supervision timer shall be used individually for each frame being sent.

The successful operation of the Initialisation procedure may require that one or several chained frames are positively acknowledged. The number of INITIALISATION control frames in such a chain shall not exceed 4. Each chained frame shall be positively acknowledged before the one with the next frame number can be sent.

The *Frame Number* IE of an INITIALISATION control frame shall always be set to "0" when the chain has only one frame. When several INITIALISATION control frames are used in a chain the *Frame Number* IE shall be set to "0" for the first one and incremented by one in the sending direction for each new frame in the chain. The positive acknowledgement or negative acknowledgement shall carry the frame number of the frame being acknowledged.

Upon reception of an INITIALISATION NEGATIVE ACKNOWLEDGEMENT control frame, an erroneous acknowledgement or at timer  $T_{INIT}$  expiry, the Iu UP protocol entity controlling the Initialisation procedure shall reset and restart the  $T_{INIT}$  supervision timer and repeat one INITIALISATION control frame with the same frame number. The repetition shall be performed up to  $N_{INIT}$  times,  $N_{INIT}$  being chosen by the operator (default  $N_{INIT} = 3$ ). The  $N_{INIT}$  (maximum number of allowed repetition) is the aggregate count for each frame in the chain and is restart each time a frame is positively acknowledged.

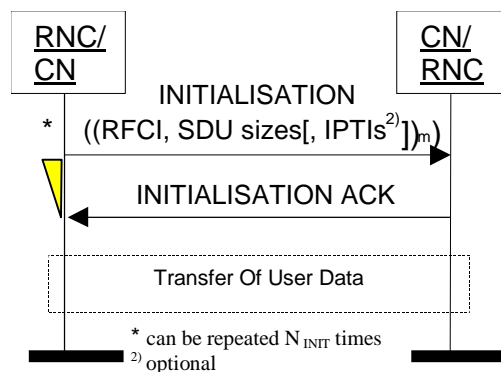


Figure 9: Successful Initialisation of Iu UP for m RFCIs

### 6.5.2.2 Unsuccessful operation

If the INITIALISATION control frame is incorrectly formatted and cannot be correctly treated by the receiving Iu UP protocol layer, this latter sends an INITIALISATION NEGATIVE ACKNOWLEDGEMENT control frame.

If the receiver does not support the Iu UP Mode version used for the Initialisation procedure, it shall send a negative acknowledgement using the highest version it supports among the versions proposed by the sender. If none of the proposed versions are supported, the receiver shall respond with a negative acknowledgement using the highest version it supports.

After  $N_{INIT}$  successive negative acknowledgment, erroneous acknowledgment or  $T_{INIT}$  expiry for INITIALISATION control frames having the same frame number, the Initialisation procedure is unsuccessfully terminated and the Iu UP protocol layers in RNC take appropriate local actions.

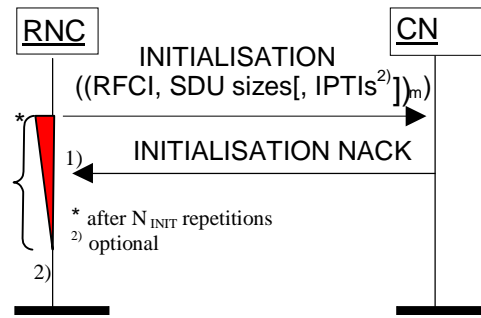


Figure 10: Unsuccessful initialization of Lu UP: 1)  $N_{INIT}$  negative acknowledgement or 2)  $N_{INIT}$  expiries of timer  $T_{INIT}$

### 6.6.3.25 Iu UP Mode versions supported

**Description:** This field indicates the Iu UP Mode Versions ~~supported~~ proposed by the ~~RNC~~ sender for the related RAB for the initialisation procedure. Up to 16 Iu UP Mode versions can be simultaneously indicated.

**Value range:**

Each bit, in the two octet field, indicates a Iu UP Protocol version: (First octet, bit 7) indicates version 16, (Second octet, bit 0) indicates version 1.

Bit = 0 means "Version not supported, ~~or~~ not allowed or not proposed"

Bit = 1 means "Version supported among the required versions and proposed"

**Field length:** 2 octets

### 6.6.3.26 Iu UP Mode Version

**Description:** This field indicates the Iu UP Mode version used for type 14 frames. Up to 16 Iu UP Mode Versions can be ~~simultaneously~~ available.

**Value range:** {1-16} The binary coded value is the version number minus 1 (e.g. version 1 is coded "0000", ..., version 16 is coded "1111").

**Field length:** 4 bits