Technical Specification Group Radio Access Network
Marco Island, USA 4 - 7 June 2002

RP#16(02) 0417

TSG_Doc_Num	Specification	CR_Num	Revision_Num	3G_Release	CR_Subject	CR_Category	Cur_Ver_Num	New_Ver_Num	Tdoc_Num	WorkItem
RP-020417	25.413	447		Rel-4	Extension container for Last Known Service Area IE	F	4.4.0	4.5.0	R3-021205	TEI
RP-020417	25.413	448		Rel-5	Extension container for Last Known Service Area IE	A	5.0.0	5.1.0	R3-021206	TEI
RP-020417	25.413	452		Rel-4	Correction of wrong implementation of CR429	F	4.4.0	4.5.0	R3-021308	TEI
RP-020417	25.413	453		Rel-5	Correction of wrong implementation for CR429	A	5.0.0	5.1.0	R3-021309	TEI
RP-020417	25.413	476		Rel-4	Transport Layer Address at RAB modification	F	4.4.0	4.5.0	R3-021619	TEI
RP-020417	25.413	478	1	Rel-4	Correction due to the wrong implementation of CR326&244 and	F	4.4.0	4.5.0	R3-021652	TEI
RP-020417	25.413	479	1	Rel-5	Correction due to the wrong implementation of CR326&244 and	A	5.0.0	5.1.0	R3-021653	TEI

CR-Form-v5

CHANGE REQUEST

| ⌘ | **25.413** CR **447** | ⌘ **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: ⌘   (U)SIM ☐   ME/UE ☐   Radio Access Network **X**   Core Network **X**

Title: ⌘	Extension container for *Last Known Service Area* IE	
Source: ⌘	R-WG3	
Work item code: ⌘	TEI	*Date:* ⌘ 2002-05-09

Category: ⌘	**F**	*Release:* ⌘ Rel-4

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 <u>TR 21.900</u>.

Use <u>one</u> of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
REL-4   (Release 4)
REL-5   (Release 5)

Reason for change: ⌘	The new IE *Last Known Service Area* has been introduced without extension container.
Summary of change: ⌘	An extension container is added to the ASN.1 definition of the *Last Known Service Area* IE. Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release) because if a node which do not implement this CR receives a *Last Known Service* IE with the introduced extension container this will result in a transfer syntax error. The CR has an impact under protocol point of view. The impact can be considered isolated because the change affects only one optional IE definition within the Location reporting function.
Consequences if not approved: ⌘	If this CR is not approved no backwards compatible changes will be possible in the future if this IE group needs to be extended by additional IEs.

Clauses affected: ⌘	9.3.4

Other specs affected:	⌘ **X**	Other core specifications ⌘	CR448 25.413 Rel-5
	☐	Test specifications	
	☐	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.

9.3.4   Information Element Definitions

```
-- ************************************************************
--
-- Information Element Definitions
--
-- ************************************************************
```

*** unaffected ASN.1 definitions ***

```
-- L

LAC                  ::= OCTET STRING (SIZE (2))

LAI ::= SEQUENCE {
    pLMNidentity              PLMNidentity,
    lAC              LAC,
    iE-Extensions             ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL
}

LAI-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

LastKnownServiceArea    ::= SEQUENCE {
    sAI        SAI,
    ageOfSAI    INTEGER (0..32767),
    iE-Extensions   ProtocolExtensionContainer { {LastKnownServiceArea-ExtIEs} } OPTIONAL,
...
}

LastKnownServiceArea-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
        ...
}
```

CR-Form-v5

CHANGE REQUEST

⌘	**25.413** CR **448**	⌘ **rev**	**-**	⌘	Current version:	**5.0.0**	⌘

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Title: ⌘	Extension container for *Last Known Service Area* IE	
Source: ⌘	R-WG3	
Work item code: ⌘	TEI	***Date:*** ⌘ 2002-05-09

Category: ⌘ **A**		***Release:*** ⌘ Rel-5	

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Consequences if not approved: ⌘	If this CR is not approved no backwards compatible changes will be possible in the future if this IE group needs to be extended by additional IEs.

Clauses affected: ⌘	9.3.4

Other specs affected: ⌘	**X** Other core specifications	⌘	CR447 25.413 Rel-4
	☐ Test specifications		
	☐ O&M Specifications		

Other comments: ⌘	

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*** unaffected ASN.1 definitions ***

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LAI ::= SEQUENCE {
    pLMNidentity            PLMNidentity,
    lAC             LAC,
    iE-Extensions           ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL
}

LAI-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

LastKnownServiceArea    ::= SEQUENCE {
    sAI         SAI,
    ageOfSAI    INTEGER (0..32767),
    iE-Extensions   ProtocolExtensionContainer { {LastKnownServiceArea-ExtIEs} } OPTIONAL,
...
}

LastKnownServiceArea-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
        ...
}
```

CR-Form-v4

CHANGE REQUEST

| | ⌘ | **25.413** CR **452** | ⌘ 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: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title: ⌘	Correction due to the wrong implementation of CR429	
Source: ⌘	R-WG3	
Work item code: ⌘	TEI	*Date:* ⌘ 29 April 2002

Category: ⌘	**F**		*Release:* ⌘ REL-4

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 <u>TR 21.900</u>.

Use <u>one</u> of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	At RAN3#27, the CR429 was approved but it was wrongly implemented in the version 4.4.0 of RANAP after RAN#15.
Summary of change: ⌘	The semantic description and thus the formula of the *Vertical Accurancy C*ode IE are corrected <u>Impact assessment towards the previous version of the specification (same release):</u> This CR has isolated impact with the previous version of the specification (same release) because the way of calculating the altitude uncertainty (*Vertical Accurancy Code* IE). This would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise. The CR has an impact under functional point of view. The impact can be considered isolated because the change affects the Location reporting function.
Consequences if not approved: ⌘	TS 25.413 will still not be fully aligned with LCS stage 2 and TS 25.331.

Clauses affected: ⌘	9.2.1.16

Other specs affected: ⌘	☐	Other core specifications ⌘	25.413 v5.0.0 CR453
	☐	Test specifications	
	☐	O&M Specifications	

Other comments: ⌘	

9.2.1.16   Request Type

This element indicates the type of UE location to be reported from RNC and it is either a Service Area or Geographical Area.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Request Type				
>Event	M		ENUMERATED(Stop Change of service area, Direct, Change of service area, ..., Stop Direct)	
>Report Area	M		ENUMERATED(Service Area, Geographical Area, ...)	When the Event IE is set to "Stop Change of service area" or to "Stop Direct", the value of the Report area IE shall be the same as in the LOCATION REPORTING CONTROL message that initiated the location reporting.
>Horizontal Accuracy Code	O		INTEGER(0..127)	The requested accuracy "r" is derived from the "accuracy code" k by $r = 10 \times (1.1^k - 1)$
>Vertical Accuracy Code	O		INTEGER(0..127)	~~The requested accuracy "vr" is derived from the "accuracy code" k by $hv = 45 \times (1.025^k \wedge k - 1)$.~~ The requested accuracy "v" is derived from the "accuracy code" k by $v = 45 \times (1.025^k - 1)$.
>Response time	C – IfDirect&GeoAreaReportArea		ENUMERATED (Low Delay, Delay Tolerant, …)	
>Positioning Priority	C – ifDirect&ChangeArea		ENUMERATED(High Priority, Normal Priority, …)	
>Client type	C – ifDirect		ENUMERATED(Emergency Services, Value Added Services, PLMN Operator Services, Lawful Intercept Services, …)	Identifies the type of client

Condition	Explanation
IfDirect&GeoAreaReportArea	This IE shall be present if the *Event* IE is set to 'Direct' and the *Report Area* IE is set to 'Geographical Area'.
IfDirect	This IE shall be present if the *Event* IE is set to 'Direct'.
IfDirect&ChangeArea	This IE shall be present if the *Event* IE is set to 'Direct' or "Change of Service Area".

CR-Form-v4

CHANGE REQUEST

| ⌘ | **25.413** CR **453** | ⌘ | 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: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title: ⌘	Correction due to the wrong implementation of CR429	
Source: ⌘	R-WG3	
Work item code: ⌘	TEI	*Date:* ⌘ 29 April 2002
Category: ⌘ **A**		*Release:* ⌘ REL-5

Use <u>one</u> of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
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Use <u>one</u> of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	At RAN3#27, the CR429 was approved but it was wrongly implemented in the version 4.4.0 that was the base of the first version 5.0.0 of RANAP after RAN#15.
Summary of change: ⌘	The semantic description and thus the formula of the *Vertical Accurancy C*ode IE are corrected <u>Impact assessment towards the previous version of the specification (same release):</u> This CR has isolated impact with the previous version of the specification (same release) because the way of calculating the altitude uncertainty (*Vertical Accurancy Code* IE). This would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise. The CR has an impact under functional point of view. The impact can be considered isolated because the change affects the Location reporting function.
Consequences if not approved: ⌘	TS 25.413 will still not be fully aligned with LCS stage 2 and TS 25.331.

Clauses affected: ⌘	9.2.1.16

Other specs affected: ⌘	☐ Other core specifications ⌘	25.413 v4.4.0 CR452
	☐ Test specifications	
	☐ O&M Specifications	

Other comments: ⌘	

9.2.1.16   Request Type

This element indicates the type of UE location to be reported from RNC and it is either a Service Area or Geographical Area.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Request Type				
>Event	M		ENUMERATED(Stop Change of service area, Direct, Change of service area, ..., Stop Direct)	
>Report Area	M		ENUMERATED(Service Area, Geographical Area, ...)	When the Event IE is set to "Stop Change of service area" or to "Stop Direct", the value of the Report area IE shall be the same as in the LOCATION REPORTING CONTROL message that initiated the location reporting.
>Horizontal Accuracy Code	O		INTEGER(0..127)	The requested accuracy "r" is derived from the "accuracy code" k by $r = 10 \times (1.1^k - 1)$
>Vertical Accuracy Code	O		INTEGER(0..127)	~~The requested accuracy "vr" is derived from the "accuracy code" k by $hv = 45x^*(1.025^k \wedge k - 1)$.~~ The requested accuracy "v" is derived from the "accuracy code" k by $v = 45 \times (1.025^k - 1)$.
>Response time	C – IfDirect&GeoAreaReportArea		ENUMERATED (Low Delay, Delay Tolerant, …)	
>Positioning Priority	C – ifDirect&ChangeArea		ENUMERATED(High Priority, Normal Priority, …)	
>Client type	C – ifDirect		ENUMERATED(Emergency Services, Value Added Services, PLMN Operator Services, Lawful Intercept Services, …)	Identifies the type of client

Condition	Explanation
IfDirect&GeoAreaReportArea	This IE shall be present if the *Event* IE is set to 'Direct' and the *Report Area* IE is set to 'Geographical Area'.
IfDirect	This IE shall be present if the *Event* IE is set to 'Direct'.
IfDirect&ChangeArea	This IE shall be present if the *Event* IE is set to 'Direct' or "Change of Service Area".

CR-Form-v5

CHANGE REQUEST

| ⌘ | **25.413** CR **476** | ⌘ **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: ⌘   (U)SIM ☐   ME/UE ☐   Radio Access Network **X**   Core Network **X**

Title:	⌘	Transport Layer Address at RAB modification
Source:	⌘	R-WG3
Work item code:	⌘ TEI	***Date:*** ⌘ 2002-05-15

Category: ⌘ **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)* ***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)*

Reason for change: ⌘	The procedure text relating to the handling of RAB modifications currently allows a R99 and REL-4 RNC to decide whether to make use of provided Transport Layer Information or not. A liaison from CN4 (R3-021146) informed RAN3 that when MSLC is not supported for the link between a RNC (R99 or REL-4) and the MGW, and the RNC decides to ignore the provided Transport Layer Information the result will be that wrong bearer is released by the CN since the MSC currently assumes that the bearer is modified to the new terminations and deletes the old terminations. The situation where the RNC does not use the provided addresses would normally only appear when the bandwidth requirement for the modified RAB is less than currently established one. It was agreed during RAN#29 to remove the optionality from Rel4.

Summary of change: ⌘	The RNC shall during RAB modification make use of the new Transport Layer Information if provided. Impact assessment towards the previous version of the specification (same release): This CR has isolated impact towards the previous version of the specification (same release). The impact can be considered isolated because it only affects RAB Modification when: • MSLC is not supported for the link between RNC and MGW; • and the RNC applies the option to not make use of the provided Transport Layer Information. This CR has an impact under functional point of view since the current optionality in the RNC is restricted by removing the possibility for the "abnormal condition" where the RNC does not make use of the new Transport Layer Information

	⌘	provided at RAB Modification.
Consequences if not approved:	⌘	The wrong bearer may be released for the RAB modification case described above.

Clauses affected:	⌘	8.2.2

Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	none

Other comments:	⌘	

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8.2 RAB Assignment

8.2.1 General

The purpose of the RAB Assignment procedure is to establish new RABs and/or to enable modifications and/or releases of already established RABs for a given UE. The procedure uses connection oriented signalling.

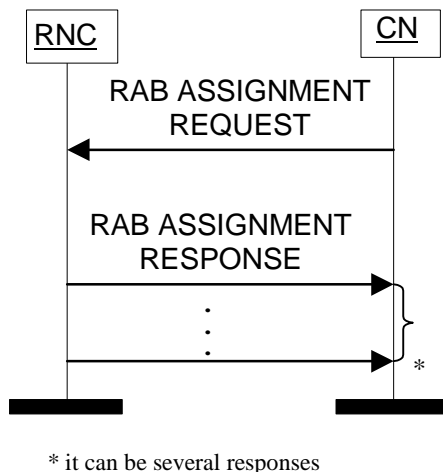## 8.2.2 Successful Operation

* it can be several responses

Figure 1: RAB Assignment procedure. Successful operation.

The CN shall initiate the procedure by sending a RAB ASSIGNMENT REQUEST message. When sending the RAB ASSIGNMENT REQUEST message, the CN shall start the $T_{RABAssgt}$ timer.

The CN may request UTRAN to:

- establish,

- modify,

- release

one or several RABs with one RAB ASSIGNMENT REQUEST message.

The CN shall include in the RAB ASSIGNMENT REQUEST message at least one request to either establish/modify or release a RAB.

The message shall contain the information required by the UTRAN to build the new RAB configuration, such as:

- list of RABs to establish or modify with their bearer characteristics;

- list of RABs to release.

For each RAB requested to establish, the message shall contain:

- RAB ID.

- NAS Synchronisation Indicator (only when available).

- RAB parameters (including e.g. Allocation/Retention Priority).

- User Plane Information (i.e required User Plane Mode and required UP Mode Versions).

- Transport Layer Information.

- PDP Type Information (only for PS)

- Data Volume Reporting Indication (only for PS).

- DL GTP-PDU sequence number (only when GTP-PDU sequence number is available in cases of intersystem change from GPRS to UMTS or when establishing a RAB for an existing PDP context or in some further cases described in [21]).

- UL GTP-PDU sequence number (only when GTP-PDU sequence number is available in cases of intersystem change from GPRS to UMTS or when establishing a RAB for an existing PDP context or in some further cases described in [21]).

- DL N-PDU sequence number (only when N-PDU sequence number is available in case of intersystem change from GPRS to UMTS or in some further cases described in [21]).

- UL N-PDU sequence number (only when N-PDU sequence number is available in case of intersystem change from GPRS to UMTS or in some further cases described in [21]).

For each RAB requested to modify, the message may contain:

- RAB ID (mandatory).

- NAS Synchronisation Indicator.

- RAB parameters.

- Transport Layer Information.

- User Plane Information.

The *Transport Layer Information* IE may be present at a RAB modification except in the case when the only other present IE, besides the *RAB ID* IE, is the *NAS Synchronisation Indicator* IE.

At a RAB modification, the *RAB parameter* IE and the *User Plane Information* IE shall be present in RAB ASSIGNMENT REQUEST message only when any previously set value is requested to be modified.

If, for a RAB requested to be modified, one (or more) of these IEs except *RAB ID* IE are not present in RAB ASSIGNMENT REQUEST message the RNC shall continue to use the value(s) currently in use for the not present IEs.

For each RAB request to release, the message shall contain:

- RAB ID.

- Cause.

Upon reception of the RAB ASSIGNMENT REQUEST message UTRAN shall execute the requested RAB configuration. 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.

The same RAB ID shall only be present once in the whole RAB ASSIGNMENT REQUEST message.

The RAB ID shall identify uniquely the RAB for the specific CN domain for the particular UE, which makes the RAB ID unique over the Iu connection on which the RAB ASSIGNMENT REQUEST message is received. When a RAB ID already in use over that particular Iu instance is used, the procedure is considered as modification of that RAB.

The RNC shall pass the contents of *RAB ID* IE to the radio interface protocol for each RAB requested to establish or modify.

The RNC shall establish or modify the resources according to the values of the *Allocation/Retention Priority* IE (priority level, pre-emption indicators, queuing) and the resource situation as follows:

- The RNC shall consider the priority level of the requested RAB, when deciding on the resource allocation.

- If the requested RAB is allowed for queuing and the resource situation so requires, RNC may place the RAB in the establishment queue.

- The priority levels and the pre-emption indicators may (singularly or in combination) be used to determine whether the RAB assignment has to be performed unconditionally and immediately. If the requested RAB is marked as "may trigger pre-emption" and the resource situation so requires, RNC may trigger the pre-emption procedure which may then cause the forced release of a lower priority RAB which is marked as "pre-emptable". Whilst the process and the extent of the pre-emption procedure is operator dependent, the pre-emption indicators, if given in the RAB ASSIGNMENT REQUEST message, shall be treated as follows:

  1. The values of the last received *Pre-emption Vulnerability* IE and *Priority Level* IE shall prevail.

  2. If the *Pre-emption Capability* IE is set to "may trigger pre-emption", then this allocation request may trigger the pre-emption procedure.

  3. If the *Pre-emption Capability* IE is set to "shall not trigger pre-emption", then this allocation request shall not trigger the pre-emption procedure.

  4. If the *Pre-emption Vulnerability* IE is set to "pre-emptable", then this connection shall be included in the pre-emption process.

  5. If the *Pre-emption Vulnerability* IE is set to "not pre-emptable", then this connection shall not be included in the pre-emption process.

  6. If the *Priority Level* IE is set to "no priority" the given values for the *Pre-emption Capability* IE and *Pre-emption Vulnerability* IE shall not be considered. Instead the values "shall not trigger pre-emption" and "not pre-emptable" shall prevail.

- If the *Allocation/Retention Priority* IE is not given in the RAB ASSIGNMENT REQUEST message, the allocation request shall not trigger the pre-emption process and the connection may be pre-empted and considered to have the value "lowest" as priority level. Moreover, queuing shall not be allowed.

- The UTRAN pre-emption process shall keep the following rules:

  1. UTRAN shall only pre-empt RABs with lower priority, in ascending order of priority.

  2. The pre-emption may be done for RABs belonging to the same UE or to other UEs.

If the *NAS Synchronisation Indicator* IE is contained in the RAB ASSIGNMENT REQUEST message, the RNC shall pass it to the radio interface protocol for the transfer to the UE.

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

If the *Service Handover* IE is included, this tells if the RAB

- should be handed over to GSM, i.e. from NAS point of view, the RAB should be handed over to GSM as soon as possible although the final decision whether to perform a handover to GSM is still made in UTRAN.

- should not be handed over to GSM, i.e. from NAS point of view, the RAB should remain in UMTS as long as possible although the final decision whether to perform a handover to GSM is still made in UTRAN.

- shall not be handed over to GSM, i.e. the RAB shall never be handed over to GSM. This means that UTRAN shall not initiate handover to GSM for the UE unless the RABs with this indication have first been released with the normal release procedures.

The value of the *Service Handover* IE is valid throughout the lifetime of the RAB or until changed by a RAB modification.

The *Service Handover* IE shall only influence decisions made regarding UTRAN initiated inter-system handovers.

If the *Service Handover* IE is not included, the decision whether to perform an inter-system handover to GSM is only an internal UTRAN matter.

UTRAN shall report to CN, in the first RAB ASSIGNMENT RESPONSE message, the result for all the requested RABs, such as:

- List of RABs successfully established or modified.

- List of RABs released.

- List of RABs queued.

- List of RABs failed to establish or modify.

- List of RABs failed to release.

The same RAB ID shall only be present once in the whole RAB ASSIGNMENT RESPONSE message.

For each RAB successfully established towards the PS domain, the RNC shall include the *Transport Layer Address* IE and the *Iu Transport Association* IE in the RAB ASSIGNMENT RESPONSE message.

For each RAB successfully modified or released towards the PS domain, for which data volume reporting has been requested, the RNC shall include the *DL Data Volumes* IE in the RAB ASSIGNMENT RESPONSE message.

For each RAB successfully released towards the PS domain, the RNC shall include in the RAB ASSIGNMENT RESPONSE message, if available, the *DL GTP-PDU Sequence Number* IE and the *UL GTP-PDU Sequence Number* IE, if the release was initiated by UTRAN.

The RNC shall report in the RAB ASSIGNMENT RESPONSE message at least one RAB:

- setup/modified or

- released or

- queued or

- failed to setup/modify or

- failed to release.

If any alternative RAB parameter values have been used when establishing or modifying a RAB, these RAB parameter values shall be included in the RAB ASSIGNMENT RESPONSE message.

For the CS domain, UTRAN shall report the outcome of a specific RAB to establish or modify only after the transport network control plane signalling, which is needed for RAB establishment or modification, has been executed. At a RAB establishment, the transport network control plane signalling shall use the *Transport Layer Address* IE and *Iu Transport Association* IE. At a RAB modification when *Transport Layer Address* IE and *Iu Transport Association* IE is included, it is up to the RNC to decide if any transport network control plane signalling shall be performed or if the already existing transport bearer shall be used. If the RNC decides to establish a new transport bearer,. the The transport network control plane signalling shall then use the possibly included *Transport Layer Address* IE and *Iu Transport Association* IE. Then the switch over to this new transport bearer shall be done immediately after transport bearer establishment and initialisation of the user plane mode. If *Transport Layer Address* IE and *Iu Transport Association* IE is not included, then the RNC decides tomay modify the already existing transport bearer, the transport network control plane signalling shall not use the possibly included *Transport Layer Address* IE and *Iu Transport Association* IE. That is, re-binding with *Iu Transport Association* IE shall not be done.

For each RAB successfully modified towards the PS domain, if the RNC has changed the *Transport Layer Address* IE and/or the *Iu Transport Association* IE, it shall include the new value(s) in the RAB ASSIGNMENT RESPONSE message.

Before reporting the successful outcome of a specific RAB to establish or modify, 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 Assignment shall fail with the cause value "RNC unable to establish all RFCs".

In case of establishment of a RAB for the PS domain, the CN must be prepared to receive user data before the RAB ASSIGNMENT RESPONSE message has been received.

If none of the RABs have been queued, the CN shall stop timer T $_{RABAssgt}$. And the RAB Assignment procedure terminates. In that case, the procedure shall also be terminated in UTRAN.

When the request to establish or modify one or several RABs is put in the queue, UTRAN shall start the timer $T_{QUEUING}$. This timer specifies the maximum time for queuing of the request of establishment or modification. The same timer $T_{QUEUING}$ is supervising all RABs being queued.

For each RAB that is queued the following outcomes shall be possible:

- successfully established or modified;

- failed to establish or modify;

- failed due to expiry of the timer $T_{QUEUING}$.

For the queued RABs, indicated in the first RAB ASSIGNMENT RESPONSE message, UTRAN shall report the outcome of the queuing for every RAB individually or for several RABs in subsequent RAB ASSIGNMENT RESPONSE message(s). This is left to implementation. UTRAN shall stop $T_{QUEUING}$ when all RABs have been either successfully established or modified or failed to establish or modify. The RAB Assignment procedure is then terminated both in CN and UTRAN when all RABs have been responded to.

When CN receives the response that one or several RABs are queued, CN shall expect UTRAN to provide the outcome of the queuing function for each RAB before expiry of the $T_{RABAssgt}$ timer. In case the timer $T_{RABAssgt}$ expires, the CN shall consider the RAB Assignment procedure terminated and the RABs not reported shall be considered as failed.

In the case the timer $T_{QUEUING}$ expires, the RAB Assignment procedure terminates in UTRAN for all queued RABs, and UTRAN shall respond for all of them in one RAB ASSIGNMENT RESPONSE message. The RAB Assignment procedure shall also be terminated in CN.

In case a request to modify or release a RAB contains the RAB ID of a RAB being queued, the RAB shall be taken out of the queue and treated according to the second request. The first request shall be responded to as a RAB failed to setup or modify with the cause value "Request superseded".

When UTRAN reports unsuccessful establishment/modification of a RAB, the cause value should be precise enough to enable the core network to know the reason for unsuccessful establishment/modification. Typical cause values are: "Requested Traffic Class not Available", "Invalid RAB Parameters Value", "Requested Maximum Bit Rate not Available", "Requested Maximum Bit Rate for DL not Available", "Requested Maximum Bit Rate for UL not Available", "Requested Guaranteed Bit Rate not Available", "Requested Guaranteed Bit Rate for DL not Available", "Requested Guaranteed Bit Rate for UL not Available", "Requested Transfer Delay not Achievable", "Invalid RAB Parameters Combination", "Condition Violation for SDU Parameters", "Condition Violation for Traffic Handling Priority", "Condition Violation for Guaranteed Bit Rate", "User Plane Versions not Supported", "Iu UP Failure", "Iu Transport Connection Failed to Establish".

If the RAB ID of a RAB requested to be released is unknown in the RNC, this shall be reported as a RAB failed to release with the cause value "Invalid RAB ID".

The RNC may indicate an impending directed retry attempt to GSM by sending RAB ASSIGNMENT RESPONSE message with a RAB ID included in the list of RABs failed to setup and a cause value of "Directed Retry".

The RNC shall be prepared to receive a RAB ASSIGNMENT REQUEST message containing a *RABs To Be Released* IE at any time and shall always reply to it. If there is an ongoing RAB Assignment procedure for a RAB indicated within the *RABs To Be Released* IE, the RNC shall discard the preceding RAB Assignment procedure for that specific RAB, release any related resources and report the released RAB within the RAB ASSIGNMENT RESPONSE message.

After sending RAB ASSIGNMENT RESPONSE message containing RAB ID within the *RABs Released* IE, the RNC shall be prepared to receive new establishment request of a RAB identified by the same RAB ID

8.2.3 Unsuccessful Operation

The unsuccessful operation for this Class 3 Elementary procedure is described under the Successful Operation chapter.

8.2.4 Abnormal Conditions

For a RAB requested to be modified, if only the *RAB ID* IE, the *NAS Synchronisation Indicator* IE and the *Transport Layer Information* IE are included in the *First Setup or Modify Item* IE this RAB shall not be modified, and the

corresponding *RAB ID* IE with *Cause* IE shall be included in the "RABs Failed To Setup Or Modify List" in the RAB ASSIGNMENT RESPONSE message.

If, for a RAB requested to be setup towards the PS domain, any of these following IEs:

- *PDP Type Information*.

- *Data Volume Reporting Indication*.

is not present, the RNC shall continue with the procedure.

Interactions with Relocation Preparation procedure:

If the relocation becomes necessary during the RAB Assignment procedure, the RNC may interrupt the ongoing RAB Assignment procedure and initiate the Relocation Preparation procedure as follows:

1. The RNC shall terminate the RAB Assignment procedure indicating unsuccessful RAB configuration modification:

   - for all queued RABs;

   - for RABs not already established or modified, and

   - for RABs not already released;

   with the cause "Relocation triggered".

2. The RNC shall terminate the RAB Assignment procedure indicating successful RAB configuration modification:

   - for RABs already established or modified but not yet reported to the CN, and

   - for RABs already released but not yet reported to the CN.

3. The RNC shall report this outcome of the procedure in one RAB ASSIGNMENT RESPONSE message.

4. The RNC shall invoke relocation by sending the RELOCATION REQUIRED message to the active CN node(s).

5. The CN shall terminate the RAB Assignment procedure at reception of the RAB ASSIGNMENT RESPONSE message.

Directed retry from UMTS to GSM (CS domain only):

In the case where the RNC has no RAB configuration for a particular UE in the CS domain, and the RNC receives a RAB ASSIGNMENT REQUEST message for that UE requesting the establishment of one RAB only, a directed retry to perform inter-system handover to GSM may be initiated. In this case the RNC may interrupt the ongoing RAB Assignment procedure and initiate the Relocation Preparation procedure as follows:

1. The RNC shall terminate the RAB Assignment procedure indicating unsuccessful RAB configuration modification of that RAB with the cause "Directed retry".

2. The RNC shall report this outcome of the procedure in one RAB ASSIGNMENT RESPONSE message.

3. The RNC shall invoke relocation by sending the RELOCATION REQUIRED message to the active CN node, with the cause "Directed Retry".

4. The CN shall terminate the RAB Assignment procedure at reception of the RAB ASSIGNMENT RESPONSE message.

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CHANGE REQUEST

| ⌘ | **25.413** CR **478** | ⌘ | 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: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title: ⌘	Correction due to the wrong implementation of CR326&244 and error in the CR424	
Source: ⌘	R-WG3	
Work item code: ⌘	TEI	***Date:*** ⌘ 24 May 2002

Category: ⌘ **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)*
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)*

Reason for change: ⌘	At RAN3#23 (Helsinki, Finland, 27th–31st August, 2001), the Rel4 CR326 "Alignment of Conditional Presence with RAN3 Error Handling Principles" [R3-012544] and the Rel4 CR244 "N-to-M relation between CN and UTRAN" [R3-012098] were approved but they wrongly implemented in the version 4.2.0 of RANAP after RAN#13. At RAN3#27 (Orlando, USA, February 18th–22nd, 2002), the mirror Rel4 CR424 "Handling of Global RNC-ID in Reset and Reset resource" [R3-020703] was approved but it was erroneously not exactly the mirror of the Rel99 CR423 [R3-020704].

The full standardization story for the section 8.29 from version 4.1.0 to 4.4.0 is as follows:
- RANAP v4.1.0 has the last correct version of section 8.29
- Between 4.1.0 and 4.2.0, only two CRs that affect section 8.29 were approved at RAN3#23.
  - CR326 rev1 R3-012544 "Alignment of Conditional Presence with RAN3 Error Handling Principles"
  - CR244 rev6 R3-012098 "N-to-M relation between CN and UTRAN"
  They were both wrongly implemented. The point is that V4.2.0 is based on a wrong copy/paste of section 8.29.2.2 in section 8.29.2.1.
- Between 4.2.0 and 4.3.0, only one CR that affects section 8.29 was approved at RAN3#25.
  - CR373 rev1 R3-013401 "N-to-M relation between CN and UTRAN impacts on CN initiated Reset Resource procedure"
  This CR was intended to correct the wrong implementation of previous CR244. However this CR did correct all the mistakes due to wrong implementation of CR244 and CR326.
- Between 4.3.0 and 4.4.0, only one CR that affects section 8.29 was approved at RAN3#27.
  - CR424 rev2 R3-020703 "Handling of Global RNC-ID in Reset and Reset resource"
  This CR was not the exact mirror of the Rel99 CR423 R3-020704. Indeed the change was erroneously made in the section 8.29.2.1 instead of 8.29.2.2

Summary of change: ⌘	The procedure text for the Reset Resource procedure is thus corrected according to correct

implementation of CR 244, 326 and 424.

Impact assessment towards the previous version of the specification (same release):
This CR has isolated impact with the previous version of the specification (same release) because of change in the understanding of Reset Resource procedure. This would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.
The CR has an impact under functional point of view.
The impact can be considered isolated because the change affects the Reset Ressource function.

| *Consequences if not approved:* | ⌘ | The procedure text for the Reset Resource procedure will remain wrong and then lead to implementation misunderstandings and errors. |

Clauses affected:	⌘	8.29		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.413 v5.0.0 CR479
Other comments:	⌘			

8.29   Reset Resource

8.29.1   General

The purpose of the Reset Resource procedure is to initialise part of the UTRAN in the event of an abnormal failure in the CN or vice versa (e.g. Signalling Transport processor reset). The procedure uses connectionless signalling.

8.29.1.1   Reset Resource procedure initiated from the RNC

Void

8.29.1.2   Reset Resource procedure initiated from the CN

Void.

8.29.2   Successful Operation

8.29.2.1   Reset Resource procedure initiated from the RNC

Figure 1: RNC initiated Reset Resource procedure. Successful operation.

The RNC initiates this procedure by sending a RESET RESOURCE message to the CN.

The RESET RESOURCE message shall include the *CN Domain Indicator* IE, the *Global RNC-ID* IE, the *Cause* IE with appropriate cause value (e.g. "Signalling Transport Resource Failure") and a list containing *Iu Signalling Connection Identifier* IEs.

On reception of this message the ~~RNC~~CN shall release locally the resources and references (i.e. ~~radio~~ resources and Iu signalling connection identifiers) associated to the ~~specific CN node and~~ Iu signalling connection identifiers indicated in the received message. ~~The *Global RNC-ID* IE shall not be included in the Reset Resource message. If no *Global CN-ID* IE is included in the RESET RESOURCE message to indicate the sending CN node, the default CN node for the indicated CN domain shall be considered as sender.~~ The ~~RNC~~CN shall always return the RESET RESOURCE ACKNOWLEDGE message to the ~~CN~~RNC when all Iu-related resources and references have been released and shall include the *CN Domain Indicator* IE and a list of Iu Signalling Connection Identifier IEs. The list of ~~Iu signalling connection identifiers~~*Iu Signalling Connection Identifier* IEs within the RESET RESOURCE ACKNOWLEDGE message shall be in the same order as received in the RESET RESOURCE message. Unknown signalling connection identifiers shall be reported as released.

When a RESET RESOURCE ACKNOWLEDGE 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.

Both CN and RNC shall provide means to prevent the immediate re-assignment of released Iu signalling connection identifiers to minimise the risk that the Reset Resource procedure releases the same Iu signalling connection identifiers re-assigned to new Iu connections.

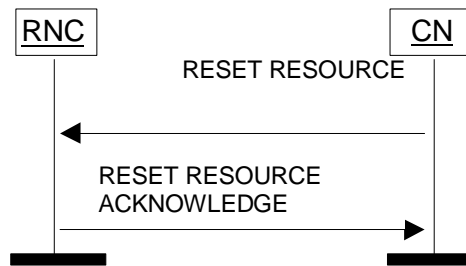### 8.29.2.2   Reset Resource procedure initiated from the CN

Figure 2: CN initiated Reset Resource procedure. Successful operation.

The CN initiates this procedure by sending a RESET RESOURCE message to the RNC.

The RESET RESOURCE message shall include the *CN Domain Indicator* IE, the *Cause* IE with appropriate cause value (e.g. "Signalling Transport Resource Failure") and a list containing *Iu Signalling Connection Identifier* IEs.

When a RESET RESOURCE 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.

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Both RNC and CN shall provide means to prevent the immediate re-assignment of released Iu signalling connection identifiers to minimise the risk that the Reset Resource procedure releases the same Iu signalling connection identifiers re-assigned to new Iu connections.

CR-Form-v4

CHANGE REQUEST

| ⌘ | **25.413** CR **479** | ⌘ 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: ⌘   (U)SIM ☐   ME/UE ☐   Radio Access Network **X**   Core Network **X**

Title: ⌘	Correction due to the wrong implementation of CR326&244 and error in the CR424	
Source: ⌘	R-WG3	
Work item code: ⌘	TEI	***Date:*** ⌘ 24 May 2002
Category: ⌘ **A**		***Release:*** ⌘ REL-5

Use <u>one</u> of the following categories:
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REL-4   (Release 4)
REL-5   (Release 5)

Reason for change: ⌘	At RAN3#23 (Helsinki, Finland, 27ᵗʰ–31ˢᵗ August, 2001), the Rel4 CR326 "Alignment of Conditional Presence with RAN3 Error Handling Principles" [R3-012544] and the Rel4 CR244 "N-to-M relation between CN and UTRAN" [R3-012098] were approved but they wrongly implemented in the version 4.2.0 of RANAP after RAN#13.
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Impact assessment towards the previous version of the specification (same release):
This CR has isolated impact with the previous version of the specification (same release) because of change in the understanding of Reset Resource procedure. This would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.
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Consequences if not approved:	⌘	The procedure text for the Reset Resource procedure will remain wrong and then lead to implementation misunderstandings and errors.

Clauses affected:	⌘	8.29		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.413 v4.4.0 CR479
Other comments:	⌘			

8.29   Reset Resource

8.29.1   General

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Void

8.29.1.2   Reset Resource procedure initiated from the CN

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8.29.2   Successful Operation

8.29.2.1   Reset Resource procedure initiated from the RNC

Figure 1: RNC initiated Reset Resource procedure. Successful operation.

The RNC initiates this procedure by sending a RESET RESOURCE message to the CN.

The RESET RESOURCE message shall include the *CN Domain Indicator* IE, the *Global RNC-ID* IE, the *Cause* IE with appropriate cause value (e.g. "Signalling Transport Resource Failure") and a list containing *Iu Signalling Connection Identifier* IEs.

On reception of this message the ~~RNC~~CN shall release locally the resources and references (i.e. ~~radio~~ resources and Iu signalling connection identifiers) associated to the ~~specific CN node and~~ Iu signalling connection identifiers indicated in the received message. ~~The *Global RNC-ID* IE shall not be included in the Reset Resource message. If no *Global CN-ID* IE is included in the RESET RESOURCE message to indicate the sending CN node, the default CN node for the indicated CN domain shall be considered as sender.~~ The ~~RNC~~CN shall always return the RESET RESOURCE ACKNOWLEDGE message to the ~~CN~~RNC when all Iu-related resources and references have been released and shall include the *CN Domain Indicator* IE and a list of Iu Signalling Connection Identifier IEs. The list of *Iu Signalling Connection Identifier* IEs~~Iu signalling connection identifiers~~ within the RESET RESOURCE ACKNOWLEDGE message shall be in the same order as received in the RESET RESOURCE message. Unknown signalling connection identifiers shall be reported as released.

When a RESET RESOURCE ACKNOWLEDGE 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.

Both CN and RNC shall provide means to prevent the immediate re-assignment of released Iu signalling connection identifiers to minimise the risk that the Reset Resource procedure releases the same Iu signalling connection identifiers re-assigned to new Iu connections.

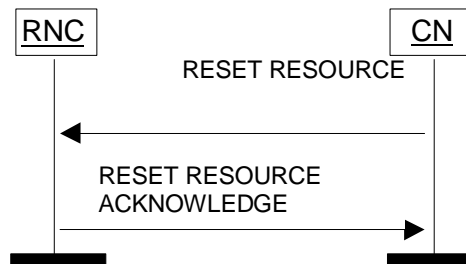## 8.29.2.2   Reset Resource procedure initiated from the CN

Figure 2: CN initiated Reset Resource procedure. Successful operation.

The CN initiates this procedure by sending a RESET RESOURCE message to the RNC.

The RESET RESOURCE message shall include the *CN Domain Indicator* IE, the *Cause* IE with appropriate cause value (e.g. "Signalling Transport Resource Failure") and a list containing *Iu Signalling Connection Identifier* IEs.

When a RESET RESOURCE 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.

On reception of this message the RNC shall release locally the resources and references (i.e. radio resources and Iu signalling connection identifiers) associated to the specific CN node and Iu signalling connection identifiers indicated in the received message. The *Global RNC-ID* IE shall not be included in the RESET RESOURCE message. If no *Global CN-ID* IE is included in the RESET RESOURCE message to indicate the sending CN node, the default CN node for the indicated CN domain shall be considered as sender. The RNC shall always return the RESET RESOURCE ACKNOWLEDGE message to the CN when all Iu-related resources and references have been released and shall include the *CN Domain Indicator* IE, a list of *Iu Signalling Connection Identifier* IEs and the *Global RNC-ID* IE. The list of *Iu Signalling Connection Identifier* IEs within the RESET RESOURCE ACKNOWLEDGE message shall be in the same order as received in the RESET RESOURCE message. Unknown signalling connection identifiers shall be reported as released.

Both RNC and CN shall provide means to prevent the immediate re-assignment of released Iu signalling connection identifiers to minimise the risk that the Reset Resource procedure releases the same Iu signalling connection identifiers re-assigned to new Iu connections.