TSG-RAN Meeting #11
Palm Springs, CA, U.S.A., 13-16 March 2001

RP-010110

Title: **Agreed CRs to TS 25.413**

Source: **TSG-RAN WG3**

Agenda item: **5.3.3**

Tdoc_Num	Specification	CR_Num	Revision_Num	CR_Subject	CR_Category	WG_Status	Cur_Ver_Num	New_Ver_Num
R3-010245	25.413	236	1	Deletion of IHOSS (Point to Point Octet Stream Service)	F	agreed	3.4.0	3.5.0
R3-010246	25.413	238	1	Relocation Command – RABS to be released IE	F	agreed	3.4.0	3.5.0
R3-010744	25.413	240	2	New values for Paging Cause	F	agreed	3.4.0	3.5.0
R3-010281	25.413	241	1	Condition for when to include DRX Cycle Length Coefficient	F	agreed	3.4.0	3.5.0
R3-010282	25.413	242	1	Handling of Response messages with IEs with criticality = Ignore IE	F	agreed	3.4.0	3.5.0
R3-010292	25.413	243	1	Clarification of Iu signalling connection co-ordination for inter system handover	F	agreed	3.4.0	3.5.0
R3-010929	25.413	245	1	Clarification of Condition for SDU Format Information	F	agreed	3.4.0	3.5.0
R3-010174	25.413	246		Editorial correction to RANAP functions list	D	agreed	3.4.0	3.5.0
R3-010248	25.413	248	1	RANAP Paging Procedure Description	F	agreed	3.4.0	3.5.0
R3-010247	25.413	249		Clarification of definition of Class 1 Elementary Procedure (EP)	F	agreed	3.4.0	3.5.0
R3-010735	25.413	253		Modification of Relocation Requirement IE	F	agreed	3.4.0	3.5.0
R3-010736	25.413	254		Interaction of Relocation and Location Report procedures	F	agreed	3.4.0	3.5.0

R3-010738	25.413	255		Handling of RABs failing during relocation	F	agreed	3.4.0	3.5.0
R3-010979	25.413	256	1	Corrections to RAB parameters	F	agreed	3.4.0	3.5.0
R3-010741	25.413	257		Incomplete explanation of condition IfNotOnlyNSI	F	agreed	3.4.0	3.5.0
R3-010742	25.413	258		Handling for SRNS Context Response at unavailable seq. no.s.	F	agreed	3.4.0	3.5.0
R3-010761	25.413	260		Handling of the Procedures Triggering an Error Indication Procedure	F	agreed	3.4.0	3.5.0
R3-010803	25.413	261		User Plane Information for RAB modification	F	agreed	3.4.0	3.5.0
R3-011083	25.413	263	2	Erroneous Criticality Diagnostics IE	F	agreed	3.4.0	3.5.0
R3-011000	25.413	266	1	Relocation Complete Clarification	F	agreed	3.4.0	3.5.0

3GPP TSG-RAN WG3 Meeting #18
Lindigo, Sweden, 15 – 19 January 2001

Tdoc R3-010245083

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **236** ⌘ rev **1-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Deletion of IHOSS (Point to Point Octet Stream Service)
Source:	⌘	R-WG3
Work item code:	⌘	~~GPRS~~
Date:	⌘	2001-01-16~~02~~
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential 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:	⌘	Functionality not required. Lack of support for feature in both S1 and N3.
Summary of change:	⌘	~~Removed all references to OSP:IHOSS.~~ Added comment after references to OSP:IHOSS.
Consequences if not approved:	⌘	IHOSS is not used in the CN any longer so shall~~is~~ not be needed in the RAN either. ~~This would therefore be extraneous information if included in this spec.~~There are no backwards compatibility issues with this change.

Clauses affected:	⌘	~~3.3,~~ 9.2.1.40, 9.3.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	See Tdoc# S1-000341.

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.2.1.40 PDP Type Information

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDP Type Information				
>PDP Type	M	1 to <maxnoofPDPDirections>	ENUMERATED(empty, PPP, OSP:IHOSS, IPv4, IPv6,…)	PDP Type is defined in [8], and the restrictions on usage shall comply with [8]. **Usage**: When the IE is repeated then PDP Type for downlink is signalled first, followed by PDP Type for uplink; when the IE is not repeated, the PDP Type shall apply to both uplink and downlink. OSP:IHOSS: This value shall not be used.

Range bound	Explanation
MaxnoofPDPDirections	Number of directions for which PDP Type is signalled separately

9.3.4 Information Element Definitions

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

RANAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxNrOfErrors,
    maxNrOfPDPDirections,
    maxNrOfPoints,
    maxNrOfRABs,
    maxNrOfSeparateTrafficDirections,
    maxRAB-Subflows,
    maxRAB-SubflowCombination

FROM RANAP-Constants

    Criticality,
    ProcedureCode,
    ProtocolIE-ID,
    TriggeringMessage
FROM RANAP-CommonDataTypes

    ProtocolExtensionContainer{},
    RANAP-PROTOCOL-EXTENSION
FROM RANAP-Containers;

-- A

AllocationOrRetentionPriority ::= SEQUENCE {
    priorityLevel           PriorityLevel,
    pre-emptionCapability       Pre-emptionCapability,
    pre-emptionVulnerability    Pre-emptionVulnerability,
    queuingAllowed          QueuingAllowed,
    iE-Extensions           ProtocolExtensionContainer { {AllocationOrRetentionPriority-ExtIEs} }
OPTIONAL,
    ...
}

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

AreaIdentity ::= CHOICE {
    sAI             SAI,
    geographicalArea        GeographicalArea,
    ...
}

-- B

BindingID               ::= OCTET STRING (SIZE (4))

-- C


Cause ::= CHOICE {
    radioNetwork            CauseRadioNetwork,
    transmissionNetwork     CauseTransmissionNetwork,
    nAS             CauseNAS,
    protocol            CauseProtocol,
    misc                CauseMisc,
    non-Standard            CauseNon-Standard,
    ...
```

```
}

CauseMisc ::= INTEGER {
    om-intervention (113),
    no-resource-available (114),
    unspecified-failure (115),
    network-optimisation (116)
} (113..128)

CauseNAS ::= INTEGER {
    user-restriction-start-indication (81),
    user-restriction-end-indication (82),
    normal-release (83)
} (81..96)

CauseProtocol ::= INTEGER {
    transfer-syntax-error (97),
    semantic-error (98),
    message-not-compatible-with-receiver-state (99),
    abstract-syntax-error-reject (100),
    abstract-syntax-error-ignore-and-notify (101),
    abstract-syntax-error-falsely-constructed-message (102)

} (97..112)

CauseRadioNetwork ::= INTEGER {
    rab-pre-empted (1),
    trelocoverall-expiry (2),
    trelocprep-expiry (3),
    treloccomplete-expiry (4),
    tqueing-expiry (5),
    relocation-triggered (6),
    trellocalloc-expiry(7),
    unable-to-establish-during-relocation (8),
    unknown-target-rnc (9),
    relocation-cancelled (10),
    successful-relocation (11),
    requested-ciphering-and-or-integrity-protection-algorithms-not-supported (12),
    change-of-ciphering-and-or-integrity-protection-is-not-supported (13),
    failure-in-the-radio-interface-procedure (14),
    release-due-to-utran-generated-reason (15),
    user-inactivity (16),
    time-critical-relocation (17),
    requested-traffic-class-not-available (18),
    invalid-rab-parameters-value (19),
    requested-maximum-bit-rate-not-available (20),
    requested-guaranteed-bit-rate-not-available (21),
    requested-transfer-delay-not-achievable (22),
    invalid-rab-parameters-combination (23),
    condition-violation-for-sdu-parameters (24),
    condition-violation-for-traffic-handling-priority (25),
    condition-violation-for-guaranteed-bit-rate (26),
    user-plane-versions-not-supported (27),
    iu-up-failure (28),
    relocation-failure-in-target-CN-RNC-or-target-system(29),
    invalid-RAB-ID (30),
    no-remaining-rab (31),
    interaction-with-other-procedure (32),
    requested-maximum-bit-rate-for-dl-not-available (33),
    requested-maximum-bit-rate-for-ul-not-available (34),
    requested-guaranteed-bit-rate-for-dl-not-available (35),
    requested-guaranteed-bit-rate-for-ul-not-available (36),
    repeated-integrity-checking-failure (37),
    requested-report-type-not-supported (38),
    request-superseded (39),
    release-due-to-UE-generated-signalling-connection-release (40),
    resource-optimisation-relocation (41),
    requested-information-not-available (42),
    relocation-desirable-for-radio-reasons (43),
    relocation-not-supported-in-target-RNC-or-target-system (44),
    directed-retry (45),
    radio-connection-with-UE-Lost (46)
} (1..64)

CauseNon-Standard ::= INTEGER (129..256)

CauseTransmissionNetwork ::= INTEGER {
    signalling-transport-resource-failure (65),
```

```
    iu-transport-connection-failed-to-establish (66)
} (65..80)


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
    procedureCriticality        Criticality         OPTIONAL,
    iEsCriticalityDiagnostics       CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

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

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality       Criticality,
        iE-ID               ProtocolIE-ID,
        repetitionNumber        RepetitionNumber        OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs}
} OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

CGI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    lAC             LAC,
    cI              CI,
    iE-Extensions           ProtocolExtensionContainer { {CGI-ExtIEs} } OPTIONAL
}

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

ChosenEncryptionAlgorithm       ::= EncryptionAlgorithm

ChosenIntegrityProtectionAlgorithm  ::= IntegrityProtectionAlgorithm

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

ClassmarkInformation2           ::= OCTET STRING

ClassmarkInformation3           ::= OCTET STRING

CN-DomainIndicator ::= ENUMERATED {
    cs-domain,
    ps-domain
}



-- D

DataVolumeReference         ::= INTEGER (0..255)

DataVolumeReportingIndication ::= ENUMERATED {
    do-report,
    do-not-report
}

DCH-ID ::= INTEGER (0..255)

DeliveryOfErroneousSDU ::= ENUMERATED {
    yes,
    no,
    no-error-detection-consideration
}

DeliveryOrder::= ENUMERATED {
    delivery-order-requested,
```

```
    delivery-order-not-requested
}

DL-GTP-PDU-SequenceNumber       ::= INTEGER (0..65535)
-- Reference: xx.xxx

DL-N-PDU-SequenceNumber         ::= INTEGER (0..65535)
-- Reference: xx.xxx

D-RNTI                  ::= INTEGER (0..1048575)

DRX-CycleLengthCoefficient          ::= INTEGER (6..9)

DSCH-ID ::= INTEGER (0..255)

-- E

EncryptionAlgorithm             ::= INTEGER { no-encryption (0), standard-UMTS-encryption-algorith-
UEA1 (1) } (0..15)

EncryptionInformation ::= SEQUENCE {
    permittedAlgorithms     PermittedEncryptionAlgorithms,
    key             EncryptionKey,
    iE-Extensions           ProtocolExtensionContainer { {EncryptionInformation-ExtIEs} } OPTIONAL
}

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

EncryptionKey               ::= BIT STRING (SIZE (128))
-- Reference: 33.102

Event ::= ENUMERATED {
    stop,
    direct,
    change-of-servicearea,
    ...
}

-- F
-- G

GeographicalArea ::= CHOICE {
    point               GA-Point,
    pointWithUnCertainty        GA-PointWithUnCertainty,
    polygon             GA-Polygon,
    ...
}

GeographicalCoordinates ::= SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    iE-Extensions           ProtocolExtensionContainer { {GeographicalCoordinates-ExtIEs} }
OPTIONAL,
    ...
}

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

GA-Point ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-Point-ExtIEs} } OPTIONAL,
    ...
}

GA-Point-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithUnCertainty ::=SEQUENCE {
    geographicalCoordinates     GeographicalCoordinates,
    iE-Extensions           ProtocolExtensionContainer { {GA-PointWithUnCertainty-ExtIEs} }
OPTIONAL,
    uncertaintyCode         INTEGER (0..127)
```

```
}

GA-PointWithUnCertainty-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-Polygon ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF
    SEQUENCE {
        geographicalCoordinates     GeographicalCoordinates,
        iE-Extensions           ProtocolExtensionContainer { {GA-Polygon-ExtIEs} } OPTIONAL,
        ...
    }

GA-Polygon-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

GlobalRNC-ID ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    rNC-ID              RNC-ID
}

GTP-TEI                 ::= OCTET STRING (SIZE (4))
-- Reference: xx.xxx

GuaranteedBitrate           ::= INTEGER (0..16000000)
-- Unit is bits per sec

-- H

-- I


IMEI                    ::= OCTET STRING (SIZE (8))
-- Reference: 23.003

IMSI                    ::= TBCD-STRING (SIZE (3..8))
-- Reference: 23.003

IntegrityProtectionAlgorithm        ::= INTEGER { standard-UMTS-integrity-algorithm-UIA1 (0) }
(0..15)

IntegrityProtectionInformation ::= SEQUENCE {
    permittedAlgorithms     PermittedIntegrityProtectionAlgorithms,
    key             IntegrityProtectionKey,
    iE-Extensions           ProtocolExtensionContainer { {IntegrityProtectionInformation-ExtIEs} }
OPTIONAL
}

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

IntegrityProtectionKey          ::= BIT STRING (SIZE (128))

IuSignallingConnectionIdentifier    ::= BIT STRING (SIZE (24))

IuTransportAssociation ::= CHOICE {
    gTP-TEI             GTP-TEI,
    bindingID           BindingID,
    ...
}

-- J
-- K

KeyStatus   ::= ENUMERATED {
    old,
    new,
    ...
}
-- L

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

LAI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    lAC             LAC,
```

```
    iE-Extensions           ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL
}

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

L3-Information              ::= OCTET STRING

-- M

MaxBitrate              ::= INTEGER (1..16000000)
-- Unit is bits per sec

MaxSDU-Size             ::= INTEGER (0..32768)
-- MaxSDU-Size
-- Unit is bit

MCC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

MNC                 ::= TBCD-STRING (SIZE (2))
-- Reference: 24.008

-- N


NAS-PDU                 ::= OCTET STRING

NAS-SynchronisationIndicator    ::= BIT STRING (SIZE (4))

NonSearchingIndication ::= ENUMERATED {
    non-searching,
    searching
}

NumberOfIuInstances         ::= INTEGER (1..2)

NumberOfSteps               ::= INTEGER (1..16)

-- O

OldBSS-ToNewBSS-Information     ::= OCTET STRING

OMC-ID                  ::= OCTET STRING (SIZE (3..22))
-- Reference: GSM TS 12.20

-- P

PagingAreaID ::= CHOICE {
    lAI             LAI,
    rAI             RAI,
    ...
}

PagingCause ::= ENUMERATED {
    terminating-conversational-call,
    terminating-streaming-call,
    terminating-interactive-call,
    terminating-background-call,
    sms,
    ...
}

PDP-TypeInformation ::= SEQUENCE (SIZE (1..maxNrOfPDPDirections)) OF
    PDP-Type

PDP-Type ::= ENUMERATED {
    empty,
    ppp,
    osp-ihoss  -- this value shall not be usedis used for OSP:IHOSS -- ,
    ipv4,
    ipv6,
    ...
}

PermanentNAS-UE-ID ::= CHOICE {
    iMSI                IMSI,
```

```
    ...
}

PermittedEncryptionAlgorithms ::= SEQUENCE (SIZE (1..16)) OF
    EncryptionAlgorithm

PermittedIntegrityProtectionAlgorithms ::= SEQUENCE (SIZE (1..16)) OF
    IntegrityProtectionAlgorithm

PLMN-ID                ::= TBCD-STRING (SIZE (3))

Pre-emptionCapability ::= ENUMERATED {
    shall-not-trigger-pre-emption,
    may-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
    pre-emptable
}

PriorityLevel              ::= INTEGER { spare (0), highest (1), lowest (14), no-priority (15) }
(0..15)

P-TMSI                 ::= OCTET STRING (SIZE (4))

-- Q

QueuingAllowed ::= ENUMERATED {
    queueing-not-allowed,
    queueing-allowed
}

-- R
RAB-AsymmetryIndicator::= ENUMERATED {
    symmetric-bidirectional,
    asymmetric-unidirectional-downlink,
    asymmetric-unidirectional-uplink,
    asymmetric-bidirectional,
    ...
}

RAB-ID                 ::= BIT STRING (SIZE (8))

RAB-Parameter-GuaranteedBitrateList ::= SEQUENCE (SIZE (1..maxNrOfSeparateTrafficDirections)) OF
GuaranteedBitrate

RAB-Parameter-MaxBitrateList       ::= SEQUENCE (SIZE (1..maxNrOfSeparateTrafficDirections)) OF
MaxBitrate

RAB-Parameters ::= SEQUENCE {
    trafficClass           TrafficClass,
    rAB-AsymmetryIndicator          RAB-AsymmetryIndicator,
    maxBitrate          RAB-Parameter-MaxBitrateList,
    guaranteedBitRate       RAB-Parameter-GuaranteedBitrateList OPTIONAL
    -- This IE is only present when traffic class indicates Conversational or Streaming --,
    deliveryOrder           DeliveryOrder,
    maxSDU-Size         MaxSDU-Size,
    sDU-Parameters          SDU-Parameters,
    transferDelay           TransferDelay OPTIONAL
    -- This IE is only present when traffic class indicates Conversational or Streaming --,
    trafficHandlingPriority     TrafficHandlingPriority OPTIONAL
    -- This IE is only present when traffic class indicates Interactiv --,
    allocationOrRetentionPriority   AllocationOrRetentionPriority OPTIONAL,
    sourceStatisticsDescriptor  SourceStatisticsDescriptor OPTIONAL
    -- This IE is only present when traffic class indicates Conversational or Streaming --,
    relocationRequirement   RelocationRequirement OPTIONAL
    -- This IE is only present for RABs towards the PS domain --,
    iE-Extensions           ProtocolExtensionContainer { {RAB-Parameters-ExtIEs} } OPTIONAL,
    ...
}

RAB-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-SubflowCombinationBitRate   ::= INTEGER (0..16000000)
```

```
RAB-TrCH-Mapping ::=    SEQUENCE ( SIZE (1..maxNrOfRABs)) OF
    RAB-TrCH-MappingItem

RAB-TrCH-MappingItem ::= SEQUENCE {
    rAB-ID          RAB-ID,
    trCH-ID-List    TrCH-ID-List,
    ...
}

RAC                 ::= OCTET STRING (SIZE (1))

RAI ::= SEQUENCE {
    lAI             LAI,
    rAC             RAC,
    iE-Extensions           ProtocolExtensionContainer { {RAI-ExtIEs} } OPTIONAL,
    ...
}

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

RateControlAllowed ::= ENUMERATED {
    not-allowed,
    allowed
}

RelocationRequirement ::= ENUMERATED {
    lossless,
    none,
    ...
}

RelocationType ::= ENUMERATED {
    ue-not-involved,
    ue-involved,
    ...
}

RepetitionNumber ::= INTEGER (1..256)

ReportArea ::= ENUMERATED {
    service-area,
    geographical-coordinates,
    ...
}

RequestType ::= SEQUENCE {
    event               Event,
    reportArea          ReportArea,
    accuracyCode        INTEGER (0..127)    OPTIONAL,
    -- To be used if Geographical Coordinates shall be reported with a requested accuracy. --
    ...
}

ResidualBitErrorRatio ::= SEQUENCE {
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..8),
    iE-Extensions           ProtocolExtensionContainer { {ResidualBitErrorRatio-ExtIEs} } OPTIONAL
}
-- ResidualBitErrorRatio = mantissa * 10^-exponent

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

RNC-ID                  ::= INTEGER (0..4095)
-- RNC-ID                   ::= BIT STRING (SIZE (12))
-- Harmonized with RNSAP and NBAP definitions

RRC-Container               ::= OCTET STRING

-- S

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

SAI ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
```

```
    lAC             LAC,
    sAC             SAC,
    iE-Extensions           ProtocolExtensionContainer { {SAI-ExtIEs} } OPTIONAL
}

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

SAPI ::= ENUMERATED {
    sapi-0,
    sapi-3,
    ...
}

SDU-ErrorRatio ::= SEQUENCE {
    mantissa            INTEGER (1..9),
    exponent            INTEGER (1..6),
    iE-Extensions           ProtocolExtensionContainer { {SDU-ErrorRatio-ExtIEs} } OPTIONAL
}
-- SDU-ErrorRatio = mantissa * 10^-exponent

SDU-ErrorRatio-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
SDU-FormatInformationParameters ::= SEQUENCE (SIZE (1..maxRAB-SubflowCombination)) OF
    SEQUENCE {
        subflowSDU-Size         SubflowSDU-Size     OPTIONAL
        -- This IE is only present for RABs that have predefined SDU size(s) --,
        rAB-SubflowCombinationBitRate   RAB-SubflowCombinationBitRate   OPTIONAL
        -- At least either of subflowSDU-Size or rABsubflowCombinationBitRate --
        -- shall be present when SDUformatInformationParameter is present --,
        iE-Extensions           ProtocolExtensionContainer { {SDU-FormatInformationParameters-
ExtIEs} } OPTIONAL,
        ...
    }

SDU-FormatInformationParameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
        sDU-ErrorRatio          SDU-ErrorRatio OPTIONAL
        -- This IE is not present when DeliveryOfErroneousSDU is set to no-error-detection-
consideration --,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        sDU-FormatInformationParameters SDU-FormatInformationParameters OPTIONAL
        -- When signalled, this IE indicates that the RAB is rate controllable --,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
    }

SDU-Parameters-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

Service-Handover ::= ENUMERATED {
    handover-to-GSM-should-be-performed,
    handover-to-GSM-should-not-be-performed,
    handover-to-GSM-shall-not-be-performed,
    ...
}

SourceID ::= CHOICE {
    sourceRNC-ID            SourceRNC-ID, -- If UMTS target
    sAI             SAI,          -- if GSM target
    ...
}


SourceRNC-ID ::= SEQUENCE {
    pLMN-ID             PLMN-ID,
    rNC-ID              RNC-ID,
    iE-Extensions           ProtocolExtensionContainer { {SourceRNC-ID-ExtIEs} } OPTIONAL
}
```

```
SourceRNC-ID-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceRNC-ToTargetRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    numberOfIuInstances     NumberOfIuInstances,
    relocationType          RelocationType,
    chosenIntegrityProtectionAlgorithm ChosenIntegrityProtectionAlgorithm   OPTIONAL
    -- Must be present for intra UMTS Handovers if available --,
    integrityProtectionKey      IntegrityProtectionKey          OPTIONAL
    -- Must be present for intra UMTS Handovers if available --,
    chosenEncryptionAlgorithForSignalling ChosenEncryptionAlgorithm     OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    cipheringKey            EncryptionKey               OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithForCS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    chosenEncryptionAlgorithForPS   ChosenEncryptionAlgorithm       OPTIONAL
    -- Must be present for intra UMTS Handovers if ciphering is active --,
    d-RNTI              D-RNTI                  OPTIONAL
    -- Included for SRNS Relocation without UE involvement --,
    targetCellId            TargetCellId                OPTIONAL
    -- Included for SRNS Relocation with UE involvement --,
    rAB-TrCH-Mapping            RAB-TrCH-Mapping                OPTIONAL
    -- Included for SRNS Relocation without UE involvement and     --
    -- if RABs are carried on DCH, USCH or DSCH transport channels --,
    iE-Extensions           ProtocolExtensionContainer { {SourceRNC-ToTargetRNC-
TransparentContainer-ExtIEs} } OPTIONAL,
    ...
}

SourceRNC-ToTargetRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceStatisticsDescriptor ::= ENUMERATED {
    speech,
    unknown,
    ...
}

SubflowSDU-Size             ::= INTEGER (0..4095)
-- Unit is bit


-- T

TargetCellId                ::= INTEGER (0..268435455)

TargetID ::= CHOICE {
    targetRNC-ID            TargetRNC-ID, -- If UMTS target
    cGI             CGI,          -- If GSM target
    ...
}




TargetRNC-ID ::= SEQUENCE {
    lAI             LAI,
    rAC             RAC         OPTIONAL
    -- Must always be present towards the PS domain and never towards the CS domain --,
    rNC-ID              RNC-ID,
    iE-Extensions           ProtocolExtensionContainer { {TargetRNC-ID-ExtIEs} } OPTIONAL
}

TargetRNC-ID-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

TargetRNC-ToSourceRNC-TransparentContainer ::= SEQUENCE {
    rRC-Container           RRC-Container,
    d-RNTI                  D-RNTI                  OPTIONAL
    -- May be included to allow the triggering of the Relocation Detect procedure from the Iur
Interface --,
    iE-Extensions           ProtocolExtensionContainer { {TargetRNC-ToSourceRNC-
TransparentContainer-ExtIEs} } OPTIONAL,
```

```
    ...
}

TargetRNC-ToSourceRNC-TransparentContainer-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

TBCD-STRING                 ::= OCTET STRING

TemporaryUE-ID ::= CHOICE {
    tMSI                TMSI,
    p-TMSI              P-TMSI,
    ...
}

TMSI                    ::= OCTET STRING (SIZE (4))

TraceReference              ::= OCTET STRING (SIZE (2..3))

TraceType               ::= OCTET STRING (SIZE (1))
-- Reference: GSM TS 12.08

TrafficClass ::= ENUMERATED {
    conversational,
    streaming,
    interactive,
    background,
    ...
}

TrafficHandlingPriority         ::= INTEGER { spare (0), highest (1), lowest (14), no-priority-used
(15) } (0..15)

TransferDelay               ::= INTEGER (0..65535)
-- Unit is millisecond

UnsuccessfullyTransmittedDataVolume ::= INTEGER (0..4294967295)

TransportLayerAddress           ::= BIT STRING (SIZE (1..160, ...))

TrCH-ID ::= SEQUENCE {
    dCH-ID              DCH-ID      OPTIONAL
    -- At least one of these IEs shall be included --,
    dSCH-ID             DSCH-ID     OPTIONAL
    -- At least one of these IEs shall be included --,
    uSCH-ID             USCH-ID     OPTIONAL
    -- At least one of these IEs shall be included --,
    ...
}

TrCH-ID-List ::=  SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    TrCH-ID

TriggerID               ::= OCTET STRING (SIZE (3..22))

-- U

UE-ID ::= CHOICE {
    imsi                IMSI,
    imei                IMEI,
    ...
}

UL-GTP-PDU-SequenceNumber       ::= INTEGER (0..65535)

UL-N-PDU-SequenceNumber         ::= INTEGER (0..65535)

UP-ModeVersions             ::= BIT STRING (SIZE (16))

USCH-ID                     ::= INTEGER (0..255)

UserPlaneMode ::= ENUMERATED {
    transparent-mode,
    support-mode-for-predefined-SDU-sizes,
    ...
}

END
```

3GPP TSG-RAN WG3 Meeting #18
Lidingo, Sweden, 15-19 January 2001

Tdoc R3-010246087

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **238** ⌘ rev **-1** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Relocation Command – RABS to Be Released IE.
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ January 1608, 2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	Unclear if RABs indicated in *RABs to Be Released* IE are the unsupported or supported RABs in target RNS.
Summary of change:	⌘	Change text of section 8.6.2 to be explicit that the *RABs to Be Released* IE are the unsupported RABs.
Consequences if not approved:	⌘	If this CR is not approved, there may be misinterpretation of these RABs whether they are the supported or unsupported RABs as the supported RABs may be incorrectly be interpreted as being ones to be released in this list (unsupported must not be released until end of Relocation). There are no backward compatiability issues associated with this CR.

Clauses affected:	⌘	8.6.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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

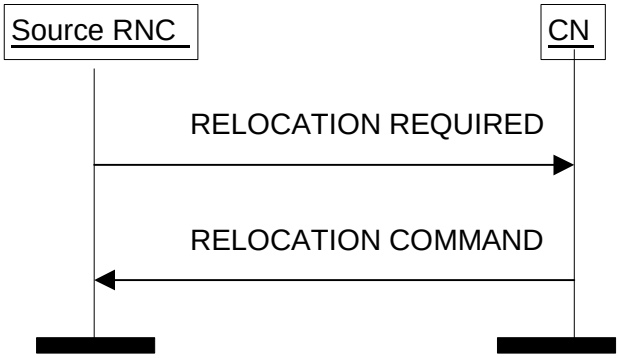

Figure 1: Relocation Preparation procedure. Successful operation.

The source RNC shall initiate the procedure by generating RELOCATION REQUIRED message. The source RNC shall decide whether to initiate the intra-system Relocation or the inter-system Relocation. 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 Relocation 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".

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

The source RNC shall indicate in the RELOCATION REQUIRED message the amount of Iu signalling connections existing for the UE by setting correctly the *Number of Iu Instances* IE included in the *Source RNC to Target RNC Transparent Container* IE. This container may also include the necessary information for Relocation co-ordination, security procedures and the handling of UE Capabilities. The container may include the RRC context to be relocated within the *RRC Container* IE. When the *Relocation Type* IE is set to "UE not involved in relocation of SRNS" and the UE is using DCH(s), DSCH(s) or USCH(s), the container shall include the mapping between each RAB subflow and transport channel identifier(s). When the RAB is carried on a DCH(s), the DCH ID(s) shall be included, and when it is carried on DSCH(s) or USCH(s), the DSCH ID(s) or USCH ID(s) respectively shall be included.

The source RNC shall send the RELOCATION REQUIRED message to the CN and the source RNC 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 RELOCATION COMMAND message to the source RNC and the CN shall start the timer $T_{RELOCcompl}$.

For each RAB originating from the PS domain, the RELOCATION COMMAND message may contain Iu transport address and Iu transport association 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 RELOCATION COMMAND message.

If *Relocation Type* IE was set to "UE involved" by the source RNC and if the target system 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 pass this information to the radio protocols. 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.

3GPP TSG-RAN WG3 Meeting #19 **R3-010744**
Cardiff, UK, Feb 26th – March 2nd, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **240** ⌘ rev **2** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	New values for Paging Cause
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-02-18
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	Two new Paging Cause values that replace one old value have been introduced in the RRC specification. RANAP needs to be aligned with this. Revision 2, alignement with additional editorial cause name change agreed at RAN2 #19.
Summary of change:	⌘	One Paging Cause value is renamed and one new is added.
Consequences if not approved:	⌘	There will be a mismatch between RRC and RANAP leading to faulty implementations. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	9.2.3.3, 9.3.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.2.3.3 Paging Cause

This element indicates the cause of paging to the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Paging Cause	M		ENUMERATED(Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Terminating Low Priority Signalling~~SMS~~, ...~~1~~ Terminating High Priority Signalling)	

9.3.4 Information Element Definitions

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

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.4 REMOVED ******

```
PagingCause ::= ENUMERATED {
    terminating-conversational-call,
    terminating-streaming-call,
    terminating-interactive-call,
    terminating-background-call,
    terminating-low-priority-signallingsms,
    ...,
    terminating-high-priority-signalling

}
```

3GPP TSG-RAN WG3 Meeting #18 **R3-010281**
Lidingö, Sweden, Jan 15 - 19, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **241** ⌘ rev **R1** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Condition for when to include DRX Cycle Length Coefficient
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-01-16
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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 DRX Cycle Length Coefficient is today an optional parameter in the PAGING message. Since the CN must include DRX Cycle Length Coefficient under certain circumstances, it should be changed to a conditional parameter.
Summary of change:	⌘	DRX Cycle Length Coefficient is made conditional.
Consequences if not approved:	⌘	It is inefficient to page the UE in UTRAN if it is not clarified when CN must include DRX Cycle Length Coefficient. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	9.1.23, 9.3.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.1.23 PAGING

This message is sent by the CN to request UTRAN to page a specific UE.

Direction: CN → RNC.

Signalling bearer mode: Connectionless.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	ignore
CN Domain Indicator	M		9.2.1.5		YES	ignore
Permanent NAS UE Identity	M		9.2.3.1		YES	ignore
Temporary UE Identity	O		9.2.3.2		YES	ignore
Paging Area ID	O		9.2.1.21		YES	ignore
Paging Cause	O		9.2.3.3		YES	ignore
Non Searching Indication	O		9.2.1.22		YES	ignore
DRX Cycle Length Coefficient	~~O~~C - ifAvailforUE		9.2.1.37		YES	ignore

Condition	Explanation
ifAvailforUE	This IE shall be included whenever available for that UE.

9.3.3 PDU Definitions

```
-- **************************************************************
--
-- PDU definitions for RANAP.
--
-- **************************************************************
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

```
-- **************************************************************
--
-- PAGING ELEMENTARY PROCEDURE
--
-- **************************************************************

-- **************************************************************
--
-- Paging
--
-- **************************************************************

Paging ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {PagingIEs} },
    protocolExtensions      ProtocolExtensionContainer { {PagingExtensions} }                   OPTIONAL,
    ...
}

PagingIEs RANAP-PROTOCOL-IES ::= {
    { ID id-CN-DomainIndicator          CRITICALITY ignore  TYPE CN-DomainIndicator             PRESENCE mandatory } |
    { ID id-PermanentNAS-UE-ID          CRITICALITY ignore  TYPE PermanentNAS-UE-ID             PRESENCE mandatory } |
    { ID id-TemporaryUE-ID              CRITICALITY ignore  TYPE TemporaryUE-ID             PRESENCE optional } |
    { ID id-PagingAreaID                CRITICALITY ignore  TYPE PagingAreaID               PRESENCE optional } |
    { ID id-PagingCause             CRITICALITY ignore  TYPE PagingCause                PRESENCE optional } |
    { ID id-NonSearchingIndication          CRITICALITY ignore  TYPE NonSearchingIndication       PRESENCE optional } |
    { ID id-DRX-CycleLengthCoefficient              CRITICALITY ignore  TYPE DRX-CycleLengthCoefficient          PRESENCE conditionaloptional
    -- This IE shall be included whenever available for that UE --                                  } ,
    ...
}

PagingExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

3GPP TSG-RAN WG3 Meeting #18 **R3-010282**
Lidingö, Sweden, Jan 15 - 19, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **242** ⌘ rev **R1** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Handling of Response messages with IEs with criticality = Ignore IE
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-01-16
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	It is not described how to handle response messages with unknown or missing IEs that are received with criticality = Ignore IE. Only initiating messages are described.
Summary of change:	⌘	Handling of response messages with unknown or missing IEs that are received with criticality = Ignore IE is added.
Consequences if not approved:	⌘	The handling of response messages with unknown or missing IEs that are received with criticality = Ignore IE will be undefined and thus giving room for not standardised solutions. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	10.3.4.2, 10.3.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

10.3.4.2 IEs other than the Procedure Code

The receiving node shall treat the different types of received criticality information of an IEs/IE group other than the *Procedure Code* IE according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE group marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more IEs/IE group using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more IEs/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*", that the receiving node does not comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored.

- if a message *initiating* a procedure that does not have a message to report the outcome of the procedure is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using the understood IEs/IE groups, and initiate the Error Indication procedure to report that one or more IEs/IE groups have been ignored.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using the understood IEs/IE groups.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups.

When reporting not comprehended IEs/IE groups marked with "*Reject IE*" or "*Ignore IE and Notify Sender*" using a response message defined for the procedure, the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group. The *Repetition Number* IE shall be included in the *Information Element Criticality Diagnostics* IE if the reported IE/IE group was part of a "SEQUENCE OF" definition.

When reporting not comprehended IEs/IE groups marked with "*Reject IE*" or "*Ignore IE and Notify Sender*" using the Error Indication procedure, the *Procedure Code* IE, the *Triggering Message* IE, *Procedure Criticality* IE, and the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group. The *Repetition Number* IE shall be included in the *Information Element Criticality Diagnostics* IE if the reported IE/IE group was part of a "SEQUENCE OF" definition.

10.3.5 Missing IE or IE group

The receiving node shall treat the missing IE/IE group according to the criticality information for the missing IE/IE group in the received message specified in the version of this specification used by the receiver:

Reject IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Reject IE*"; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the missing IEs/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- if a received message *initiating* a procedure that does not have a message to report unsuccessful outcome is missing one or more IEs/IE groups with specified criticality "*Reject IE*", the receiving node shall initiate the Error Indication procedure.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Reject IE*, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and report in the response message of the procedure that one or more IEs/IE groups were missing.

- if a received message *initiating* a procedure that does not have a message to report the outcome of the procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and initiate the Error Indication procedure to report that one or more IEs/IE groups were missing.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall initiate the Error Indication procedure.

Ignore IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Ignore IE*", the receiving node shall ignore that those IEs/IE groups are missing.

When reporting missing IEs/IE groups with specified criticality "*Reject IE*" or "*Ignore IE and Notify Sender*" using a response message defined for the procedure, the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group.

When reporting missing IEs/IE groups with specified criticality "*Reject IE*" or "*Ignore IE and Notify Sender*" using the Error Indication procedure, the *Procedure Code* IE, the *Triggering Message* IE, *Procedure Criticality* IE, and the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group.

3GPP TSG-RAN3 Meeting #18
Lidingö, Sweden, 15-19 January 2001

Tdoc R3-010292

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **243** ⌘ rev **1** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Clarification of Iu signalling connection co-ordination for inter system handover
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-01-08
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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 specification does not clearly state that co-ordination of two Iu signalling connections is not applicable for inter system handover.
Summary of change:	⌘	The handling for intersystem handover is clarified.
Consequences if not approved:	⌘	Implementations supporting intersystem handover may misinterpret the specification and this may lead to interoperability problems. This change is backwards compatible.

Clauses affected:	⌘	8.6.5, 8.10.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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 Relocation Preparation

8.6.1 General

The purpose of the Relocation Preparation procedure is to prepare relocation of SRNS either with involving UE or without involving UE. The relocation procedure shall be co-ordinated in all Iu signalling connections existing for the UE in order to allow Relocation co-ordination in the target RNC. The procedure uses connection oriented signalling.

The source RNC shall not initiate the Relocation Preparation procedure for an Iu signalling connection if a Prepared Relocation exists in the RNC for that Iu signalling connection or if a Relocation Preparation procedure is ongoing for that Iu signalling connection.

8.6.2 Successful Operation

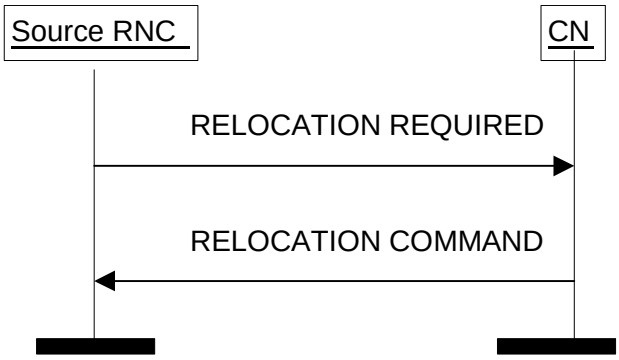

Figure 1: Relocation Preparation procedure. Successful operation.

The source RNC shall initiate the procedure by generating RELOCATION REQUIRED message. The source RNC shall decide whether to initiate the intra-system Relocation or the inter-system Relocation. 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 Relocation 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".

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

The source RNC shall indicate in the RELOCATION REQUIRED message the amount of Iu signalling connections existing for the UE by setting correctly the *Number of Iu Instances* IE included in the *Source RNC to Target RNC Transparent Container* IE. This container may also include the necessary information for Relocation co-ordination, security procedures and the handling of UE Capabilities. The container may include the RRC context to be relocated within the *RRC Container* IE. When the *Relocation Type* IE is set to "UE not involved in relocation of SRNS" and the UE is using DCH(s), DSCH(s) or USCH(s), the container shall include the mapping between each RAB subflow and transport channel identifier(s). When the RAB is carried on a DCH(s), the DCH ID(s) shall be included, and when it is carried on DSCH(s) or USCH(s), the DSCH ID(s) or USCH ID(s) respectively shall be included.

The source RNC shall send the RELOCATION REQUIRED message to the CN and the source RNC 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 RELOCATION COMMAND message to the source RNC and the CN shall start the timer $T_{RELOCcompl}$.

For each RAB originating from the PS domain, the RELOCATION COMMAND message may contain Iu transport address and Iu transport association 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 RELOCATION COMMAND message.

If *Relocation Type* IE was set to "UE involved" by the source RNC and if the target system 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. The source RNC shall pass this information to the radio protocols. 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 RELOCATION COMMAND message the source RNC shall stop the timer $T_{RELOCprep}$, RNC shall start the timer $T_{RELOCOverall}$ and RNC shall terminate the Relocation Preparation procedure. The source RNC is then defined to have a Prepared Relocation for that Iu signalling connection.

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

In case of intersystem handover to GSM the RNC shall include *MS Classmark 2* and *MS Classmark 3* IEs received from the UE in the RELOCATION REQUIRED message to the CN.

Interactions with other procedures:

If, after RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a RANAP message initiating an other 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 Relocation Cancel procedure with an appropriate value for the *Cause* IE, e.g. "Interaction with other procedure", and after successful completion of 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 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.

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 the case the relocation is cancelled the RNC shall resume any suspended procedures (if any).

After Relocation Preparation procedure is terminated successfully, 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.

8.6.3 Unsuccessful Operation

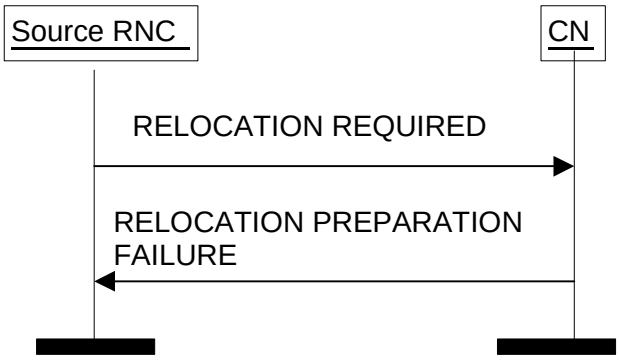

Figure 2: Relocation Preparation procedure. Unsuccessful operation.

If the CN or target system is not able to even partially accept the relocation of SRNS or a failure occurs during the Relocation Preparation procedure in the CN or the CN decides not to continue the relocation of SRNS, the CN shall send RELOCATION PREPARATION FAILURE message to the source RNC.

RELOCATION PREPARATION FAILURE message shall contain appropriate value for the *Cause* IE e.g. "$T_{RELOCalloc}$ expiry", "Relocation Failure in Target CN/RNC or Target System"., "Relocation not supported in Target RNC or Target System"

Transmission of RELOCATION PREPARATION FAILURE message terminates the procedure in the CN. Reception of RELOCATION PREPARATION FAILURE message terminates the procedure in UTRAN.

When the Relocation Preparation procedure is unsuccessfully terminated, the existing Iu signalling connection can be used normally.

If the Relocation Preparation procedure is terminated unsuccessfully, the CN shall release the possibly existing Iu signalling connection for the same UE and related to the same relocation of SRNS towards the target RNC by initiating Iu Release procedure towards the target RNC with an appropriate value for the *Cause* IE, e.g. "Relocation Cancelled".

Interactions with Relocation Cancel procedure:

If there is no response from the CN to the RELOCATION REQUIRED message before timer $T_{RELOCprep}$ expires in the source RNC, the source RNC shall cancel the Relocation Preparation procedure by initiating the Relocation Cancel procedure with appropriate value for the *Cause* IE, e.g. "$T_{RELOCprep}$ expiry".

8.6.4 Abnormal Conditions

If the target RNC, which was indicated in the RELOCATION REQUIRED message, is not known to the CN:

1. The CN shall reject the relocation of SRNS by sending a RELOCATION PREPARATION FAILURE message to the source RNC with *Cause* IE set to "Unknown target RNC".

2. The CN shall continue to use the existing Iu connection towards the source RNC.

8.6.5 Co-ordination of Two Iu Signalling Connections

If the RNC has decided to initiate Relocation Preparation procedure for a UTRAN to UTRAN relocation, the RNC shall initiate simultaneously Relocation Preparation procedure on all Iu signalling connections existing for the UE.

For intersystem handover to GSM, Relocation Preparation procedure shall be initiated only towards the circuit switched CN.

The source RNC shall not trigger the execution of relocation of SRNS unless it has received RELOCATION COMMAND message from all Iu signalling connections for which the Relocation Preparation procedure has been initiated~~existing for the UE~~.

If the source RNC receives RELOCATION PREPARATION FAILURE message from the CN, the RNC shall initiate Relocation Cancel procedure on the other Iu signalling connection for the UE if the other Iu signalling connection exists and if the Relocation Preparation procedure is still ongoing or the procedure has terminated successfully in that Iu signalling connection.

8.10 Relocation Cancel

8.10.1 General

The purpose of the Relocation Cancel procedure is to enable source RNC to cancel an ongoing relocation of SRNS. The Relocation Cancel procedure may be initiated by the source RNC during and after the Relocation Preparation procedure if either of the following conditions is fulfilled:

1. Source RNC has not yet initiated the execution of relocation of SRNS, neither via the Iur interface nor via the Uu interface.

2. After having initiated the execution of relocation of SRNS the UE has returned to source RNC by transmitting an RRC message which indicates that the UE considers the source RNC as its serving RNC.

The procedure shall be co-ordinated in all Iu signalling connections ~~existing for the Uc~~for which the Relocation Preparation procedure has been initiated. The procedure uses connection oriented signalling.

8.10.2 Successful Operation

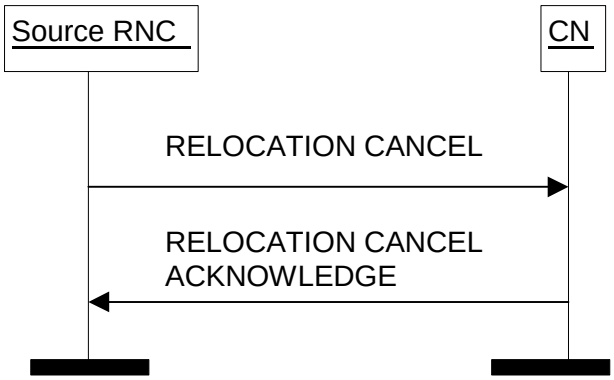

Figure 3: Relocation Cancel procedure. Successful operation.

RNC shall initiate the procedure by sending RELOCATION CANCEL message to CN. This message shall indicate the reason for cancelling the relocation of SRNS by appropriate value of the *Cause* IE. Upon reception of RELOCATION CANCEL message, CN shall send RELOCATION CANCEL ACKNOWLEDGE message to source RNC.

Transmission and reception of RELOCATION CANCEL ACKNOWLEDGE message terminates the procedure in CN and source RNC respectively. After this, the source RNC does not have a prepared relocation for that Iu signalling connection.

Interactions with Relocation Preparation procedure:

Upon reception of RELOCATION CANCEL message from source RNC, CN shall locally terminate the possibly ongoing Relocation Preparation procedure towards that RNC and abandon the relocation of SRNS.

If source RNC receives RELOCATION COMMAND message from CN after Relocation Cancel procedure is initiated, source RNC shall ignore the received RELOCATION COMMAND message.

8.10.3 Unsuccessful Operation

Not applicable.

8.10.4 Abnormal Conditions

Not applicable.

8.10.5 Co-ordination of Two Iu Signalling Connections

If Relocation Cancel procedure is to be initiated due to other reasons than reception of RELOCATION PREPARATION FAILURE message, Relocation Cancel procedure shall be initiated on all Iu signalling connections existing for the UE in which the Relocation Preparation procedure has not terminated unsuccessfully.

3GPP TSG-RAN3 Meeting #19
Cardiff, Wales, 25 February – 2 March 2001

Tdoc R3-010929

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **245** ⌘ rev **1** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Clarification of Condition for SDU Format Information
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 09 January 2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	In the current version of the specification, the SDU Format Info IE is conditional. However, the stated "condition" is neither a condition nor completely correct. It currently states that when the IE is present it indicates that the RAB is rate controllable. This is not necessarily true because a fixed-rate RAB requiring Unequal Error Protection (i.e. with subflows) would need this information included. Furthermore, it is not a condition because it does not specify the condition under which the IE shall be included, rather specifying what may be inferred by its presence – this would better be a semantic description of an optional IE.
Summary of change:	⌘	The condition name is changed to "IfPredefinedSDUSize", and the condition is changed to "This IE shall be present for RABs with pre-defined SDU sizes". This is changed in the tabular format and the ASN.1. It is also added to the semantic description (for clarification) that the IE shall always be present for rate controllable RABs. Backwards Compatibility – the change is backwards compatible.
Consequences if not approved:	⌘	It will not be possible to apply Unequal Error Protection or the Support Mode of the Iu UP for fixed rate RABs without this change.

Clauses affected:	⌘	9.2.1.3, 9.3.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.2.1.3 RAB Parameters

The purpose of the *RAB parameters* IE group and other parameters within the *RAB parameters* IE group is to indicate all RAB attributes as defined in [7] for both directions.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
>Traffic Class	M		ENUMERATED (conversational, streaming, interactive, background, ...)	**Desc.:** This IE indicates the type of application for which the Radio Access Bearer service is optimised
>RAB Asymmetry Indicator	M		ENUMERATED (Symmetric bidirectional, Asymmetric Uni directional downlink, Asymmetric Uni directional Uplink, Asymmetric Bidirectional, ...)	**Desc.:** This IE indicates asymmetry or symmetry of the RAB and traffic direction
>Maximum Bit Rate	M	1 to <nbr-SeparateTrafficDirections>	INTEGER (1..16,000,000)	**Desc.:** This IE indicates the maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The unit is: bit/s **Usage**: When nbr-SeparateTrafficDirections is equal to 2, then Maximum Bit Rate attribute for downlink is signalled first, then Maximum Bit Rate attribute for uplink
>Guaranteed Bit Rate	C-iftrafficConv-Stream	0 to <nbr-SeparateTrafficDirections>	INTEGER (0..16,000,000)	**Desc.:** This IE indicates the guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The unit is: bit/s **Usage:** 1. When nbr-SeparateTrafficDirections is equal to 2, then Guaranteed Bit Rate for downlink is signalled first, then Guaranteed Bit Rate for uplink 2. Delay and reliability attributes only apply up to the guaranteed bit rate 3. Conditional value: • Set to lowest rate controllable RAB Subflow Combination rate given by the largest RAB Subflow Combination SDU size, when present and calculated Iu Transmission Interval •

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
>Delivery Order	M		ENUMERATED (delivery order requested, delivery order not requested)	**Desc:** This IE indicates that whether the RAB shall provide in-sequence SDU delivery or not **Usage:** Delivery order requested: in sequence delivery shall be guaranteed by UTRAN on all RAB SDUs Delivery order not requested: in sequence delivery is not required from UTRAN
>Maximum SDU Size	M		INTEGER (0..32768)	**Desc.:** This IE indicates the maximum allowed SDU size The unit is: bit. **Usage:** Conditional value: set to largest RAB Subflow Combination compound SDU size when present among the different RAB Subflow Combination
> SDU parameters		1 to <maxRABSubflows>	See below	**Desc.:** This IE contains the parameters characterizing the RAB SDUs **Usage** Given per subflow with first occurence corresponding to subflow#1 etc…
>Transfer Delay	C-iftrafficConv-Stream		INTEGER (0..65535)	**Desc.:** This IE indicates the maximum delay for 95th percentile of the distribution of delay for all delivered SDUs during the lifetime of a RAB, where delay for an SDU is defined as the time from a request to transfer an SDU at one SAP to its delivery at the other SAP The unit is: millisecond. **Usage:** -
>Traffic Handling Priority	C - iftrafficInteractiv		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0…15)	**Desc.:** This IE specifies the relative importance for handling of all SDUs belonging to the radio access bearer compared to the SDUs of other bearers **Usage:** -
>Allocation/Retention priority	O		See below	**Desc.:** This IE specifies the relative importance compared to other Radio access bearers for allocation and retention of the Radio access bearer. **Usage:** If this IE is not received, the request is regarded as it cannot trigger the pre-emption process and it is vulnerable to the pre-emption process.
>Source Statistics Descriptor	C-iftrafficConv-Stream		ENUMERATED (speech, unknown, …)	**Desc.:** This IE specifies characteristics of the source of submitted SDUs **Usage:** -
>Relocation Requirement	C-ifPS		ENUMERATED (lossless, none, …)	**Desc.:** This IE specifies in which way the radio access bearer shall be treated in case of relocation **Usage:** Lossless : lossless relocation is required for this RAB

Range Bound	Explanation
nbr-SeparateTrafficDirection	Number of Traffic Directions being signalled separately. Set to 2 if RAB asymmetry indicator is asymmetric bidirectional. Set to 1 in all other cases.

Range Bound	Explanation
maxRABSubflows	Number of RAB Subflows

Condition	Explanation
IftrafficConv-Stream	This IE is only present when traffic class indicates “Conversational” or “Streaming”
IftrafficInteractiv	This IE is only present when traffic class indicates “Interactive”
IfPS	This IE is only present for RABs towards the PS domain.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SDU parameters				
>SDU Error Ratio	C-ifErroneousSDU			**Desc.:** This IE indicates the fraction of SDUs lost or detected as erroneous. This is a Reliability attribute **Usage:** The attribute is coded as follows: Mantissa * 10 $^{-\text{exponent}}$
>>Mantissa	M		INTEGER (1..9)	
>>Exponent	M		INTEGER (1..6)	
>Residual Bit Error Ratio	M			**Desc.:** This IE indicates the undetected bit error ratio for each subflow in the delivered SDU. This is a Reliability attribute. **Usage:** The attribute is coded as follows: Mantissa * 10 $^{-\text{exponent}}$
>>Mantissa	M		INTEGER (1..9)	
>>Exponent	M		INTEGER (1..8)	
>Delivery Of Erroneous SDU	M		ENUMERATED (yes, no, no-error-detection-consideration)	**Desc.:** This IE indicates whether SDUs with detected errors shall be delivered or not. In case of unequal error protection, the attribute is set per subflow This is a Reliability attribute **Usage:** Yes: error detection applied, erroneous SDU delivered No. Error detection is applied , erroneous SDU discarded no-error-detection-consideration: SDUs delivered without considering error detection
>SDU format information Parameter	C ~~-~~ ~~ifratecontrollableRAB~~-IfPredefinedSDUSize	1 to <maxRABSubflowCombinations>	See below	**Desc.:** This IE contains the list of possible exact sizes of SDUs and/or RAB Subflow Combination bit rates. It shall always be present for rate controllable RABs.

Range Bound	Explanation
MaxRABSubflowCombination	Number of RAB Subflow Combination

Condition	Explanation
IfErroneousSDU	This IE is not present when Delivery Of Erroneous SDU is set to "no-error-detection-consideration "
~~IfratecontrollableRAB~~IfPredefinedSDUSize	~~When signalled, this IE indicates that the RAB is rate controllable~~This IE shall be present for RABs with pre-defined SDU sizes.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SDU Format Information Parameter				
>Subflow SDU Size	C-ifalone		INTEGER (0…4095)	**Desc.:** This IE indicates the exact size of the SDU. The unit is: bit. **Usage:** This IE is only used for RABs that have predefined SDU size(s). It shall be present for RABs having more than one subflow. When this IE is not present and SDU format information Parameter is present, then the Subflow SDU size for the only existing subflow takes the value of Maximum SDU size.
>RAB Subflow Combination Bit Rate	C-ifalone		INTEGER (0..16,000,000)	**Desc.**: This IE indicates the RAB Subflow Combination bit rate. The unit is: bit/s. **Usage:** This IE is only present for RABs that have predefined rate controllable bit rates. When this IE is not present and SDU format information parameter is present then all Subflow SDUs are transmitted (when there is data to be transmitted) at a constant time interval. The value of this IE shall not exceed the maximum value of the IEs 'Maximum Bit Rate'. The value 0 of RAB Subflow Combination bitrate indicates that the RAB uses discontinuous transfer of the SDUs.

Condition	Explanation
Ifalone	At least either of Subflow SDU size IE or RAB Subflow Combination bit rate IE shall be present when SDU format information parameter is present

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Allocation/Retention Priority				
>Priority Level	M		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0..15)	**Desc.**: This IE indicates the priority of the request. **Usage:** The priority level and the preemption indicators may be used to determine whether the request has to be performed unconditionally and immediately
>Pre-emption Capability	M		ENUMERATED(shall not trigger pre-emption, may trigger pre-emption)	**Descr.:** This IE indicates the pre-emption capability of the request on other RABs **Usage:** The RAB shall not pre-empt other RABs or, the RAB may pre-empt other RABs The Pre-emption Capability indicator applies to the allocation of resources for a RAB and as such it provides the trigger to the pre-emption procedures/processes of the RNS.
>Pre-emption Vulnerability	M		ENUMERATED(not pre-emptable, pre-emptable)	**Desc.:** This IE indicates the vulnerability of the RAB to preemption of other RABs. **Usage**: The RAB shall not be pre-empted by other RABs or the RAB may be pre-empted by other RABs. Pre-emption Vulnerability indicator applies for the entire duration of the RAB, unless modified and as such indicates whether the RAB is a target of the pre-emption procedures/processes of the RNS
>Queuing Allowed	M		ENUMERATED(queuing not allowed, queuing allowed)	**Desc.:** This IE indicates whether the request can be placed into a resource allocation queue or not. **Usage:** Queuing of the RAB is allowed Queuing of the RAB is not allowed Queuing allowed indicator applies for the entire duration of the RAB, unless modified.

9.3.4 Information Element Definitions

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

RANAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxNrOfErrors,
    maxNrOfPDPDirections,
    maxNrOfPoints,
    maxNrOfRABs,
    maxNrOfSeparateTrafficDirections,
    maxRAB-Subflows,
    maxRAB-SubflowCombination

FROM RANAP-Constants

    Criticality,
    ProcedureCode,
    ProtocolIE-ID,
    TriggeringMessage
FROM RANAP-CommonDataTypes

    ProtocolExtensionContainer{},
    RANAP-PROTOCOL-EXTENSION
FROM RANAP-Containers;

-- Some ASN.1 Omitted --

SDU-Parameters ::= SEQUENCE (SIZE (1..maxRAB-Subflows)) OF
    SEQUENCE {
        sDU-ErrorRatio          SDU-ErrorRatio OPTIONAL
        -- This IE is not present when DeliveryOfErroneousSDU is set to no-error-detection-consideration --,
        residualBitErrorRatio       ResidualBitErrorRatio,
        deliveryOfErroneousSDU      DeliveryOfErroneousSDU,
        sDU-FormatInformationParameters SDU-FormatInformationParameters OPTIONAL
        -- When signalled, this IE indicates that the RAB is rate controllable This IE shall be present for RABs with predefined SDU sizes --,
        iE-Extensions           ProtocolExtensionContainer { {SDU-Parameters-ExtIEs} } OPTIONAL,
        ...
```

```
    }

-- Some ASN.1 Omitted --

END
```

3GPP TSG-RAN WG3 Meeting #18
Lidingö, Sweden, 15-19 Jan 2001

R3-010174

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **246** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Editorial correction to RANAP functions list
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ Jan 11, 2001
Category:	⌘	**D** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	In R3#17 (Chicago) the CN Information Broadcast procedure was removed from the RANAP protocol (R3-003135, CR231 to 25.413). This was also approved by TSG RAN#10. The related function was removed from RANAP functions list, but CR231 missed to decrement the count of NAS information transport functions from three to two. This CR corrects the number of referred functions.
Summary of change:	⌘	Updates the RANAP function list to reflect removal of CN Information Broadcast procedure.
Consequences if not approved:	⌘	

Clauses affected:	⌘	7		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:
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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7 Functions of RANAP

RANAP protocol has the following functions:

- Relocating serving RNC. This function enables to change the serving RNC functionality as well as the related Iu resources (RAB(s) and Signalling connection) from one RNC to another.
- Overall RAB management. This function is responsible for setting up, modifying and releasing RABs.
- Queuing the setup of RAB. The purpose of this function is to allow placing some requested RABs into a queue, and indicate the peer entity about the queuing.
- Requesting RAB release. While the overall RAB management is a function of the CN, the RNC has the capability to request the release of RAB.
- Release of all Iu connection resources. This function is used to explicitly release all resources related to one Iu connection.
- Requesting the release of all Iu connection resources. While the Iu release is managed from the CN, the RNC has the capability to request the release of all Iu connection resources from the corresponding Iu connection.
- SRNS context forwarding function. This function is responsible for transferring SRNS context from the RNC to the CN for intersystem forward handover in case of packet forwarding.
- Controlling overload in the Iu interface. This function allows adjusting the load in the Iu interface.
- Resetting the Iu. This function is used for resetting an Iu interface.
- Sending the UE Common ID (permanent NAS UE identity) to the RNC. This function makes the RNC aware of the UE's Common ID.
- Paging the user. This function provides the CN for capability to page the UE.
- Controlling the tracing of the UE activity. This function allows setting the trace mode for a given UE. This function also allows the deactivation of a previously established trace.
- Transport of NAS information between UE and CN (ref. [8]). This function has ~~three~~two sub-classes:
    1. Transport of the initial NAS signalling message from the UE to CN. This function transfers transparently the NAS information. As a consequence also the Iu signalling connection is set up.
    2. Transport of NAS signalling messages between UE and CN, This function transfers transparently the NAS signalling messages on the existing Iu signalling connection. It also includes a specific service to handle signalling messages differently.
- Controlling the security mode in the UTRAN. This function is used to send the security keys (ciphering and integrity protection) to the UTRAN, and setting the operation mode for security functions.
- Controlling location reporting. This function allows the CN to operate the mode in which the UTRAN reports the location of the UE.
- Location reporting. This function is used for transferring the actual location information from RNC to the CN.
- Data volume reporting function. This function is responsible for reporting unsuccessfully transmitted DL data volume over UTRAN for specific RABs.
- Reporting general error situations. This function allows reporting of general error situations, for which function specific error messages have not been defined.

These functions are implemented by one or several RANAP elementary procedures described in the following clause.

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Lidingö, Sweden, 15-19 Jan 2001

R3-010248~~190~~

CR-Form-v3

CHANGE REQUEST

⌘ **25.413 CR 248** ⌘ rev **1-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Editorial correction to RANAP Paging Procedure Description
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ Jan 16~~2~~, 2001
Category:	⌘	**F** ~~**D**~~ ***Release:*** ⌘ ~~R99~~R99

Use one of the following categories:
F *(essential 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:	⌘	In R3#17 (Chicago), during the RANAP Review questions were asked as to accuracy of the Paging Procedure description. There may be some misleading text present in explaining the function.
Summary of change:	⌘	Minor Updates made to the Paging Procedure Textual description in Ch 8.15.
Consequences if not approved:	⌘	There are no backward compatibility issues. However there is the possibility for misunderstanding~~Misunderstanding~~ of the RANAP Paging Procedure in its current form, if these changes are not approved.

Clauses affected:	⌘	Ch 8.15.
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.15 Paging

8.15.1 General

The purpose of the Paging procedure is to enable the CN to request ~~that~~ the ~~U~~UTRAN to~~E should~~ contact that ~~CN~~UE ~~node~~ ~~.page a UE for a UE terminating service request.~~ The procedure uses connectionless signalling.

8.15.2 Successful Operation

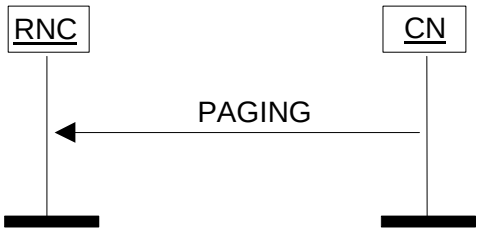

Figure 1: Paging procedure. Successful operation.

The CN shall initiate the procedure by sending a PAGING message. This message shall contain information necessary for RNC to be able to page the UE, like:

- CN Domain Indicator.
- Permanent NAS UE Identity.
- Temporary UE Identity.
- Paging Area.
- Paging Cause.
- Non Searching Indicator.
- DRX Cycle Length Coefficient

The *CN Domain Indicator* IE shall be used by the RNC to identify from which CN domain the PAGING message originates.

The *Permanent NAS UE Identity* IE (i.e. IMSI) shall be used by the UTRAN paging co-ordination function to check if a signalling connection towards the other CN domain already exists for this UE. In that case, the radio interface paging message ~~can~~ shall be sent via that connection instead of using the paging broadcast channel.

The *Temporary UE Identity* IE (e.g. TMSI) is the temporary identity of the user (allocated by that CN Domain) ~~that shall~~ which can be used ~~over the paging channel~~in a radio interface paging message. If the *Temporary UE Identity* IE is not included in the PAGING message, the RNC shall use the *Permanent NAS UE Identity* instead – ~~assuming~~if no signalling connection exists.

The *Paging Area* IE shall be used by the RNC to identify the area in which the radio interface paging message shall be broadcast in case no signalling connection, as described above, already exists for the UE. If the *Paging Area* IE is not included in the PAGING message, the whole RNC area shall be used as Paging Area – ~~provided~~ if no signalling connection exists for that UE.

The *Paging Cause* IE shall indicate to the RNC the reason for sending the PAGING message. The paging cause is transferred transparently to the UE.

The *Non Searching Indication* IE ~~shall may~~shall, if present, be used by the RNC to decide whether the UTRAN paging co-ordination function needs to be activated or not. In the absence of this IE, UTRAN paging co-ordination shall be performed.

~~If t~~The *DRX Cycle Length Coefficient* IE ~~is~~ may be included in the PAGING message, and if present, the UTRAN shall, when applicable, use it for calculating the paging occasions for the UE.

It should be noted that each PAGING message on the Iu interface relates to only one UE and therefore the RNC has to pack the pages into the relevant radio interface paging message.

The core network is responsible for the paging repetition over the Iu interface.

8.15.3 Abnormal Conditions

Not applicable.

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Lidingo, Sweden, 15-19 January 2001

Tdoc R3-010247

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CHANGE REQUEST

⌘ **25.413** **CR** **249** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Clarification of definition of Class 1 Elementary Procedure (EP)
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ January 16, 2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	Table 1 for Class 1 Elementary Procedures may be a bit confusing by not showing the successful response message in the "Unsuccessful Outcome/Response Message Column" when in some cases it applies. This CR eliminates that confusion by clarifying the definition of Class 1 Elementary Procedure that in some cases the response message used for successful outcome is also used for unsuccessful outcome.
Summary of change:	⌘	Add text to clarify the Elementary Procedure definition for Class 1 to be explicit that in the case of - "One signalling message reports both successful and unsuccessful outcome", the response message defined is in fact the one for successful outcome.
Consequences if not approved:	⌘	If not approved, there may be misunderstanding that unsuccessful outcomes can only be informed via a unique response message different than the response message used for successful outcome (e.g. via Table 1), when in fact in some cases the same response message is used for both situations. This CR does not introduce any backward compatibility problems.

Clauses affected:	⌘	3.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Relocation of SRNS: relocation of SRNS is a UMTS functionality used to relocate the serving RNS role from one RNS to another RNS. This UMTS functionality is realised by several elementary procedures executed in several interfaces and by several protocols and it may involve a change in the radio resources used between UTRAN and UE

It is also possible to relocate the serving RNS role from:

- one RNS within UMTS to another relocation target external to UMTS;
- functionality equivalent to the serving RNS role from another relocation source external to UMTS to another RNS.

Serving RNS (SRNS): role an RNS can take with respect to a specific connection between an UE and UTRAN. There is one serving RNS for each UE that has a connection to UTRAN. The serving RNS is in charge of the radio connection between a UE and the UTRAN. The serving RNS terminates the Iu for this UE

Serving RNC (SRNC): SRNC is the RNC belonging to SRNS

SRNC-ID: see [3] for definition

S-RNTI: see [3] for definition

Source RNS: role, with respect to a specific connection between UTRAN and CN, that RNS takes when it decides to initiate a relocation of SRNS

Source RNC: source RNC is the RNC belonging to source RNS

Target RNS: role an RNS gets with respect to a specific connection between UTRAN and CN when it is being a subject of a relocation of SRNS which is being made towards that RNS

Target RNC: target RNC is the RNC belonging to target RNS

Directed retry: Directed retry is the process of assigning a User Equipment to a radio resource that does not belong to the serving RNC e.g. in situations of congestion. It is triggered by the RAB Assignment procedure and employs relocation procedures.

Elementary Procedure: RANAP protocol consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between the RNS and the CN. These Elementary Procedures are defined separately and are intended to be used to build up complete sequences in a flexible manner. If the independence between some EPs is restricted, it is described under the relevant EP description. Unless otherwise stated by the restrictions, the EPs may be invoked independently of each other as stand alone procedures, which can be active in parallel. Examples on using several RANAP EPs together with each other and EPs from other interfaces can be found in reference [4].

An EP consists of an initiating message and possibly a response message. Three kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success and/or failure).
- **Class 2:** Elementary Procedures without response.
- **Class 3:** Elementary Procedures with possibility of multiple responses.

For Class 1 EPs, the types of responses can be as follows:

Successful:

- A signalling message explicitly indicates that the elementary procedure successfully completed with the receipt of the response.

Unsuccessful:

- A signalling message explicitly indicates that the EP failed.

- On time supervision expiry (i.e. absence of expected response).

Successful and Unsuccessful:

- One signalling message reports both successful and unsuccessful outcome for the different included requests. The response message used is the one defined for successful outcome.

3GPP TSG-RAN WG3 Meeting #19 ***Tdoc R3-010735***
Cardiff, WALES, 26 February- 2 March 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **253** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Modification of Relocation requirement IE semantics description
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-02-22
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	Currently RANAP mentions the lossless relocation type without further explanation or reference.
Summary of change:	⌘	A new reference is made to 23.060, where the User Plane Handling during SRNS relocation and the lossless handling are explained .
Consequences if not approved:	⌘	This specification will miss explanations or right reference on loss-less relocation type. This change is backwards compatible.

Clauses affected:	⌘	2 and 9.2.1.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

2 References

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

References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

For a specific reference, subsequent revisions do not apply".

For a non-specific reference, the latest version applies".

[1] 3GPP TR 23.930: "3rd Generation Partnership Project (3GPP) Technical Specification Group Services and System Aspects; Iu Principles".

[2] 3GPP TS 25.410: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; UTRAN Iu Interface: General Aspects and Principles".

[3] 3GPP TS 25.401: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; UTRAN Overall Description".

[4] 3GPP TR 25.931: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; UTRAN Functions, Examples on Signalling Procedures".

[5] 3GPP TS 25.412: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; UTRAN Iu Interface Signalling Transport".

[6] 3GPP TS 25.415: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; UTRAN Iu Interface User Plane Protocols".

[7] 3GPP TS 23.107: "3rd Generation Partnership Project (3GPP) Technical Specification Group Services and System Aspects; QoS Concept and Architecture".

[8] 3GPP TS 24.008: "3rd Generation Partnership Project (3GPP); Mobile radio interface layer 3 specification, Core Network Protocols – Stage 3".

[9] 3GPP TS 25.414: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; Iu Interface Data Transport and Transport Signalling".

[10] 3GPP TS 25.331: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; RRC Protocol Specification".

[11] 3GPP TS 08.08: "Mobile services Switching Centre – Base Station System (MSC – BSS) interface".

[12] 3GPP TS 12.08: "Subscriber and equipment trace".

[13] X.691 (12/94): "Information Technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[14] X.680, (12/94): "Information Technology - Abstract Syntax Notation One (ASN.1):Specification of basic notation".

[15] X.681 (12/94): "Information Technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[16] 3GPP TS 23.110: "3rd Generation Partnership Project (3GPP) Technical Specification Group Services and System Aspects, UMTS Access Stratum, Services and Functions".

[17] 3GPP TS 25.323: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; Packet Data Convergence Protocol (PDCP) Specification".

[18] 3GPP TS 25.921: "3rd Generation Partnership Project (3GPP) Technical Specification Group Radio Access Network; Guidelines and principles for protocol description and error handling".

[19] 3GPP TS 23.003: "3rd Generation Partnership Project (3GPP) Technical Specification Group Core Network; Numbering, addressing and identification".

[20] 3GPP TS 23.032: "3rd Generation Partnership Project (3GPP) Technical Specification Group Core Network; Universal Geographical Area Description (GAD)".

[21] 3GPP TS 23.060: "3rd Generation Partnership Project (3GPP) Technical Specification Group Services and System Aspect; General Packet Radio Service (GPRS); Service description; Stage 2".

9.2.1.3 RAB Parameters

The purpose of the *RAB parameters* IE group and other parameters within the *RAB parameters* IE group is to indicate all RAB attributes as defined in [7] for both directions.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
>Traffic Class	M		ENUMERATED (conversational, streaming, interactive, background, ...)	**Desc.:** This IE indicates the type of application for which the Radio Access Bearer service is optimised
>RAB Asymmetry Indicator	M		ENUMERATED (Symmetric bidirectional, Asymmetric Uni directional downlink, Asymmetric Uni directional Uplink, Asymmetric Bidirectional, ...)	**Desc.:** This IE indicates asymmetry or symmetry of the RAB and traffic direction
>Maximum Bit Rate	M	1 to <nbr-SeparateTrafficDirections>	INTEGER (1..16,000,000)	**Desc.:** This IE indicates the maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The unit is: bit/s **Usage**: When nbr-SeparateTrafficDirections is equal to 2, then Maximum Bit Rate attribute for downlink is signalled first, then Maximum Bit Rate attribute for uplink
>Guaranteed Bit Rate	C-iftrafficConv-Stream	0 to <nbr-SeparateTrafficDirections>	INTEGER (0..16,000,000)	**Desc.:** This IE indicates the guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The unit is: bit/s **Usage:** 1. When nbr-SeparateTrafficDirections is equal to 2, then Guaranteed Bit Rate for downlink is signalled first, then Guaranteed Bit Rate for uplink 2. Delay and reliability attributes only apply up to the guaranteed bit rate 3. Conditional value: Set to lowest rate controllable RAB Subflow Combination rate given by the largest RAB Subflow Combination SDU size, when present and calculated Iu Transmission Interval

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
>Delivery Order	M		ENUMERATED (delivery order requested, delivery order not requested)	**Desc:** This IE indicates that whether the RAB shall provide in-sequence SDU delivery or not **Usage:** Delivery order requested: in sequence delivery shall be guaranteed by UTRAN on all RAB SDUs Delivery order not requested: in sequence delivery is not required from UTRAN
>Maximum SDU Size	M		INTEGER (0..32768)	**Desc.:** This IE indicates the maximum allowed SDU size The unit is: bit. **Usage:** Conditional value: set to largest RAB Subflow Combination compound SDU size when present among the different RAB Subflow Combination
> SDU parameters		1 to <maxRABSubflows>	See below	**Desc.:** This IE contains the parameters characterizing the RAB SDUs **Usage** Given per subflow with first occurence corresponding to subflow#1 etc…
>Transfer Delay	C-iftrafficConv-Stream		INTEGER (0..65535)	**Desc.:** This IE indicates the maximum delay for 95th percentile of the distribution of delay for all delivered SDUs during the lifetime of a RAB, where delay for an SDU is defined as the time from a request to transfer an SDU at one SAP to its delivery at the other SAP The unit is: millisecond. **Usage:** -
>Traffic Handling Priority	C - iftrafficInteractiv		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0…15)	**Desc.:** This IE specifies the relative importance for handling of all SDUs belonging to the radio access bearer compared to the SDUs of other bearers **Usage:** -
>Allocation/Retention priority	O		See below	**Desc.:** This IE specifies the relative importance compared to other Radio access bearers for allocation and retention of the Radio access bearer. **Usage:** If this IE is not received, the request is regarded as it cannot trigger the pre-emption process and it is vulnerable to the pre-emption process.
>Source Statistics Descriptor	C-iftrafficConv-Stream		ENUMERATED (speech, unknown, …)	**Desc.:** This IE specifies characteristics of the source of submitted SDUs **Usage:** -
>Relocation Requirement	C-ifPS		ENUMERATED (lossless, none, …)	**Desc.:** This IE specifies in which way the radio access bearer shall be treated in case of relocation **Usage:** Lossless : lossless relocation is required for this RAB, as defined in [21].

3GPP TSG-RAN WG3 Meeting #19
Cardiff, WALES, 26 February- 2 March 2001

Tdoc R3-010736

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **254** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Interaction of Relocation and Location Report procedures
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 22.2.2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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: ⌘

Interworking of Location Reporting procedure and SRNS relocation is ambiguous in 3GPP TS 25.413 RANAP. According to current version of RANAP, LOCATION REPORTING CONTROL message may be sent to the Target RNC after Relocation Resource Allocation procedure, and in general case there is no reason to wait after completion of relocation as indicated in the cover page of approved CR228r1 in R3-003208. It is then possible that the RNC responds with LOCATION REPORT message containing SAI before or after the relocation has been successfully completed from the CN point of view. 3GPP TS 23.009 indicates that 3G_MSC-B notifies MSC-A or 3G_MSC-A of intra-3G_MSC-B InterSystem handover by using the A_HANDOVER_PERFORMED procedure. The notification over MAP/E interface shall only be sent after the relocation has been successfully completed. Therefore it is also enough to receive the LOCATION REPORT after the relocation completion.

3GPP TS 23.009 describes the interaction over MAP/E interface:
Location Reporting Control, 3G_MSC-B shall always initiate the Location Reporting Control procedure towards the target RNS since no request for Location Reporting is received from MSC-A. If supported by the 3G_MSC-B, the Location Reporting Control procedure shall be initiated after the Relocation Resource Allocation procedure has been executed successfully.

Summary of change: ⌘

It is proposed that the target RNC sends Location Report message after SRNS relocation is successfully completed.

Consequences if not approved: ⌘

If this CR is not approved, unnecessary complexity of 3G_MSC-B functionality remains in the 3GPP 25.413 RANAP specification. This CR has no effect on backward compatibility, it only clarifies the interaction of LOCATION REPORT and RELOCATION COMPLETE messages.

Clauses affected: ⌘ 8.20.2

Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.20 Location Report

8.20.1 General

The purpose of the Location Report procedure is to provide the UE's location information to the CN. The procedure uses connection oriented signalling.

8.20.2 Successful Operation

Figure 1: Location Report procedure. Successful operation.

The serving RNC shall initiate the procedure by generating a LOCATION REPORT message. The LOCATION REPORT message may be used as a response for the LOCATION REPORTING CONTROL message. Also, when a user enters or leaves a classified zone set by O&M, e.g. zone where a disaster occurred, a LOCATION REPORT message shall be sent to the CN including the Service Area of the UE in the *Area Identity* IE. The *Cause* IE shall indicate the appropriate cause value to CN, e.g. "User Restriction Start Indication" and "User Restriction End Indication". The CN shall react to the LOCATION REPORT message with CN vendor specific actions.

For this procedure, only Service Areas that are defined for the PS and CS domains shall be considered.

In case reporting at change of Service Area is requested by the CN, then the RNC shall issue a LOCATION REPORT message

- whenever the information given in the previous LOCATION REPORT message or INITIAL UE MESSAGE message is not anymore valid.
- upon receipt of the first LOCATION REPORTING CONTROL message following a ~~performed relocation~~Relocation Resource Allocation procedure, with *Request Type* IE set to "Change of Service Area", as soon as SAI becomes available in the new SRNC and the relocation procedure has been successfully completed.

In the case when Service Area is reported, the RNC shall include to the LOCATION REPORT message in the *Area Identity* IE the Service Area, which includes at least one of the cells from which the UE is consuming radio resources.

If the RNC can not deliver the location information as requested by the CN, the RNC shall indicate the UE location to be "Undetermined" by omitting the *Area Identity* IE. A cause value shall instead be added to indicate the reason for the undetermined location, e.g. "Requested Report Type not supported". In case the "Requested Report Type not supported" cause value is used, then also the *Request Type* IE shall be included as a reference of what report type is not supported.

If the Location Report procedure was triggered by a LOCATION REPORTING CONTROL message, which included a request for a geographical area with a specific accuracy, the LOCATION REPORT message shall include either a point with indicated uncertainty or a polygon, which both shall fulfill the requested accuracy as accurately as possible. If, on the other hand, no specific accuracy level was requested in the LOCATION REPORTING CONTROL message, it is up to UTRAN to decide with which accuracy to report.

8.20.3 Abnormal Conditions

Not applicable.

3GPP TSG-RAN WG3 Meeting #19 ***R3-010738***
Cardiff, UK, Feb 26th – March 2nd, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **255** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Handling of RABs failing during relocation
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-02-12
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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 handling of RABs that failed in the target system during relocation is not clearly described in 25.413. Especially it should not be stated that it is the information based on the IE "RABs to be released" from the RELOCATION COMMAND message that is passed to the radio protocols, since it is the RRC information from the "target RNC to source RNC transparent container" that serves this purpose. This CR tries to clarify this handling.
Summary of change:	⌘	Description of handling of RABs that fail during relocation is added.
Consequences if not approved:	⌘	The handling when target system can not support all relocated RABs will be undefined, leading to incompatible implementations. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	8.6.2, 8.7.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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 Relocation Preparation

8.6.1 General

The purpose of the Relocation Preparation procedure is to prepare relocation of SRNS either with involving UE or without involving UE. The relocation procedure shall be co-ordinated in all Iu signalling connections existing for the UE in order to allow Relocation co-ordination in the target RNC. The procedure uses connection oriented signalling.

The source RNC shall not initiate the Relocation Preparation procedure for an Iu signalling connection if a Prepared Relocation exists in the RNC for that Iu signalling connection or if a Relocation Preparation procedure is ongoing for that Iu signalling connection.

8.6.2 Successful Operation

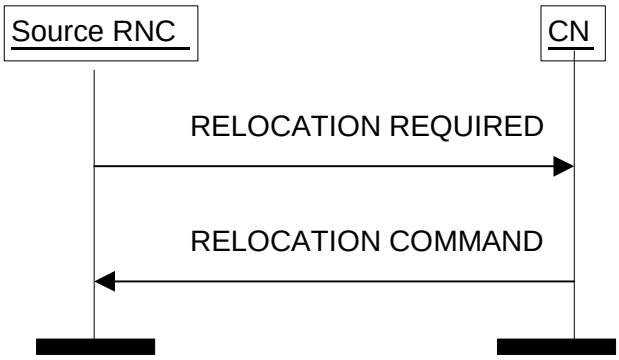

Figure 1: Relocation Preparation procedure. Successful operation.

The source RNC shall initiate the procedure by generating RELOCATION REQUIRED message. The source RNC shall decide whether to initiate the intra-system Relocation or the inter-system Relocation. 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 Relocation 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".

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

The source RNC shall indicate in the RELOCATION REQUIRED message the amount of Iu signalling connections existing for the UE by setting correctly the *Number of Iu Instances* IE included in the *Source RNC to Target RNC Transparent Container* IE. This container may also include the necessary information for Relocation co-ordination, security procedures and the handling of UE Capabilities. The container may include the RRC context to be relocated within the *RRC Container* IE. When the *Relocation Type* IE is set to "UE not involved in relocation of SRNS" and the UE is using DCH(s), DSCH(s) or USCH(s), the container shall include the mapping between each RAB subflow and transport channel identifier(s). When the RAB is carried on a DCH(s), the DCH ID(s) shall be included, and when it is carried on DSCH(s) or USCH(s), the DSCH ID(s) or USCH ID(s) respectively shall be included.

The source RNC shall send the RELOCATION REQUIRED message to the CN and the source RNC 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 RELOCATION COMMAND message to the source RNC and the CN shall start the timer $T_{RELOCcompl}$.

For each RAB successfully established in the target system and originating from the PS domain, the RELOCATION COMMAND message may contain Iu transport address and Iu transport association 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 RELOCATION COMMAND message.

If ~~*Relocation Type* IE was set to "UE involved" by the source RNC and 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. The source RNC may use this information e.g. to decide if to cancel the relocation or not ~~shall pass this information to the radio protocols~~. 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 RELOCATION COMMAND message the source RNC shall stop the timer $T_{RELOCprep}$, RNC shall start the timer $T_{RELOCOverall}$ and RNC shall terminate the Relocation Preparation procedure. The source RNC is then defined to have a Prepared Relocation for that Iu signalling connection.

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

In case of intersystem handover to GSM the RNC shall include *MS Classmark 2* and *MS Classmark 3* IEs received from the UE in the RELOCATION REQUIRED message to the CN.

Interactions with other procedures:

If, after RELOCATION REQUIRED message is sent and before the Relocation Preparation procedure is terminated, the source RNC receives a RANAP message initiating an other 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 Relocation Cancel procedure with an appropriate value for the *Cause* IE, e.g. "Interaction with other procedure", and after successful completion of 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 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.

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 the case the relocation is cancelled the RNC shall resume any suspended procedures (if any).

After Relocation Preparation procedure is terminated successfully, 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.

8.6.3 Unsuccessful Operation

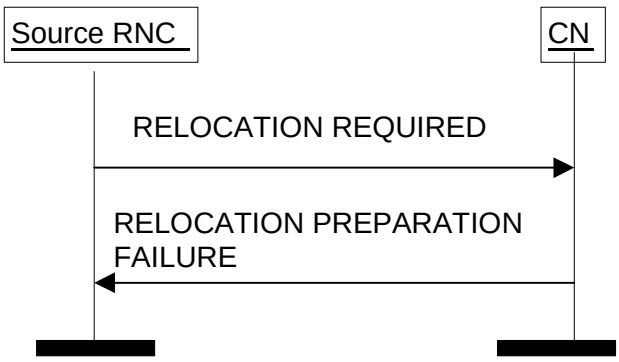

Figure 2: Relocation Preparation procedure. Unsuccessful operation.

If the CN or target system is not able to even partially accept the relocation of SRNS or a failure occurs during the Relocation Preparation procedure in the CN or the CN decides not to continue the relocation of SRNS, the CN shall send RELOCATION PREPARATION FAILURE message to the source RNC.

RELOCATION PREPARATION FAILURE message shall contain appropriate value for the *Cause* IE e.g. "$T_{RELOCalloc}$ expiry", "Relocation Failure in Target CN/RNC or Target System"., "Relocation not supported in Target RNC or Target System"

Transmission of RELOCATION PREPARATION FAILURE message terminates the procedure in the CN. Reception of RELOCATION PREPARATION FAILURE message terminates the procedure in UTRAN.

When the Relocation Preparation procedure is unsuccessfully terminated, the existing Iu signalling connection can be used normally.

If the Relocation Preparation procedure is terminated unsuccessfully, the CN shall release the possibly existing Iu signalling connection for the same UE and related to the same relocation of SRNS towards the target RNC by initiating Iu Release procedure towards the target RNC with an appropriate value for the *Cause* IE, e.g. "Relocation Cancelled".

Interactions with Relocation Cancel procedure:

If there is no response from the CN to the RELOCATION REQUIRED message before timer $T_{RELOCprep}$ expires in the source RNC, the source RNC shall cancel the Relocation Preparation procedure by initiating the Relocation Cancel procedure with appropriate value for the *Cause* IE, e.g. "$T_{RELOCprep}$ expiry".

8.6.4 Abnormal Conditions

If the target RNC, which was indicated in the RELOCATION REQUIRED message, is not known to the CN:

1. The CN shall reject the relocation of SRNS by sending a RELOCATION PREPARATION FAILURE message to the source RNC with *Cause* IE set to "Unknown target RNC".

2. The CN shall continue to use the existing Iu connection towards the source RNC.

8.6.5 Co-ordination of Two Iu Signalling Connections

If the RNC has decided to initiate Relocation Preparation procedure, the RNC shall initiate simultaneously Relocation Preparation procedure on all Iu signalling connections existing for the UE.

The source RNC shall not trigger the execution of relocation of SRNS unless it has received RELOCATION COMMAND message from all Iu signalling connections existing for the UE.

If the source RNC receives RELOCATION PREPARATION FAILURE message from the CN, the RNC shall initiate Relocation Cancel procedure on the other Iu signalling connection for the UE if the other Iu signalling connection exists and if the Relocation Preparation procedure is still ongoing or the procedure has terminated successfully in that Iu signalling connection.

8.7 Relocation Resource Allocation

8.7.1 General

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

8.7 Relocation Resource Allocation

8.7.1 General

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

8.7.2 Successful Operation

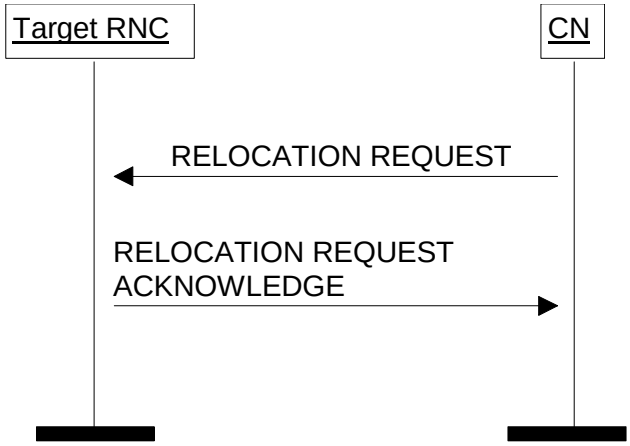

Figure 7: Relocation Resource Allocation procedure. Successful operation.

The CN shall initiate the procedure by generating RELOCATION REQUEST message. In a UTRAN to UTRAN relocation, this message shall contain the information (if any) required by the UTRAN to build the same RAB configuration as existing for the UE before the relocation.

The CN shall transmit the RELOCATION REQUEST message to target RNC and the CN shall start the timer $T_{RELOCalloc.}$

Upon reception of the RELOCATION REQUEST message, the target RNC shall initiate allocation of requested resources. 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
- User plane mode
- Priority level, queuing and pre-emption indication
- Service Handover

If the RELOCATION REQUEST message includes the *PDP Type Information* IE, the UTRAN may use this 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, and which the RNC is required to store and remember for the duration of the Iu connection.

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

If the relocation type is "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 for *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 the relocation type IE is "UE not involved in relocation of SRNS":

- The target RNC may accept a RAB only if the radio bearer(s) for the RAB exist(s) and can be used for the RAB by the target RNC.

- If existing radio bearers are not related to any RAB that is accepted by target RNC, the radio bearers shall be ignored during the relocation of SRNS and the radio bearers shall be released by radio interface protocols after completion of relocation of SRNS.

After all necessary resources for accepted RABs including the initialised Iu user plane, are successfully allocated, the target RNC shall send RELOCATION REQUEST ACKNOWLEDGE message to the CN. 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 received by the CN may optionally contain a transparent container, which shall be transferred by CN to the source RNC or the external relocation source while completing the Relocation Preparation procedure.

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 source RNC within the *RRC Container* IE contained in the *Target RNC to Source RNC Transparent Container* IE.

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

3GPP TSG-RAN WG3 Meeting #19 **R3-010979**
Cardiff, UK, Feb 26th – March 2nd, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **256** ⌘ rev **1** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Corrections to RAB parameters
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-02-28
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	Some changes need to be done for the IE RAB-parameters. Some Semantic Descriptions need to be clarified/corrected. Especially the mentioning of Iu Transmission Interval should be removed since this is an undefined concept.
Summary of change:	⌘	Semantics Descriptions for the IE RAB-parameters are corrected.
Consequences if not approved:	⌘	The semantics descriptions for the RAB Parameters IE are unclear in some parts, which may lead to misunderstandings and thus faulty implementations. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	9.2.1.3	
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments:	⌘		

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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.

9.2.1.3 RAB Parameters

The purpose of the *RAB parameters* IE group and other parameters within the *RAB parameters* IE group is to indicate all RAB attributes as defined in [7] for both directions.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
>Traffic Class	M		ENUMERATED (conversational, streaming, interactive, background, ...)	**Desc.:** This IE indicates the type of application for which the Radio Access Bearer service is optimised
>RAB Asymmetry Indicator	M		ENUMERATED (Symmetric bidirectional, Asymmetric Uni directional downlink, Asymmetric Uni directional Uplink, Asymmetric Bidirectional, ...)	**Desc.:** This IE indicates asymmetry or symmetry of the RAB and traffic direction
>Maximum Bit Rate	M	1 to <nbr-SeparateTrafficDirections>	INTEGER (1..16,000,000)	**Desc.:** This IE indicates the maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The unit is: bit/s **Usage**: When nbr-SeparateTrafficDirections is equal to 2, then Maximum Bit Rate attribute for downlink is signalled first, then Maximum Bit Rate attribute for uplink
>Guaranteed Bit Rate	C-iftrafficConv-Stream	0 to <nbr-SeparateTrafficDirections>	INTEGER (0..16,000,000)	**Desc.:** This IE indicates the guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The unit is: bit/s **Usage:** 1. When nbr-SeparateTrafficDirections is equal to 2, then Guaranteed Bit Rate for downlink is signalled first, then Guaranteed Bit Rate for uplink 2. Delay and reliability attributes only apply up to the guaranteed bit rate 3. Conditional value: Set to lowest rate controllable bitrate, where bitrate is either – one of the RAB subflow combination bitrate IEs (when present) or – one of the calculated values given when dividing the compound Subflow combination SDU sizes by the value of the IE Maximum SDU Size and then multiplying this result by the value of the IE Maximum Bit Rate. ~~– Set to lowest rate controllable RAB Subflow Combination rate~~

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
				~~given by the largest RAB Subflow Combination SDU size, when present and calculated Iu Transmission Interval~~
>Delivery Order	M		ENUMERATED (delivery order requested, delivery order not requested)	**Desc:** This IE indicates ~~that~~ whether the RAB shall provide in-sequence SDU delivery or not **Usage:** Delivery order requested: in sequence delivery shall be guaranteed by UTRAN on all RAB SDUs Delivery order not requested: in sequence delivery is not required from UTRAN
>Maximum SDU Size	M		INTEGER (0..32768)	**Desc.:** This IE indicates the maximum allowed SDU size The unit is: bit. **Usage:** Conditional value: Sset to largest RAB Subflow Combination compound SDU size (when present) among the different RAB Subflow Combinations.
> SDU parameters		1 to <maxRABSubflows>	See below	**Desc.:** This IE contains the parameters characterizing the RAB SDUs **Usage** Given per subflow with first occurence corresponding to subflow#1 etc…
>Transfer Delay	C-iftrafficConv-Stream		INTEGER (0..65535)	**Desc.:** This IE indicates the maximum delay for 95th percentile of the distribution of delay for all delivered SDUs during the lifetime of a RAB, where delay for an SDU is defined as the time from a request to transfer an SDU at one SAP to its delivery at the other SAP The unit is: millisecond. **Usage:** -
>Traffic Handling Priority	C - iftrafficInteractiv		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0…15)	**Desc.:** This IE specifies the relative importance for handling of all SDUs belonging to the radio access bearer compared to the SDUs of other bearers **Usage:** -
>Allocation/Retention priority	O		See below	**Desc.:** This IE specifies the relative importance compared to other Radio access bearers for allocation and retention of the Radio access bearer. **Usage:** If this IE is not received, the request is regarded as it cannot trigger the pre-emption process and it is vulnerable to the pre-emption process.
>Source Statistics Descriptor	C-iftrafficConv-Stream		ENUMERATED (speech, unknown, …)	**Desc.:** This IE specifies characteristics of the source of submitted SDUs **Usage:** -
>Relocation Requirement	C-ifPS		ENUMERATED (lossless, none, …)	**Desc.:** This IE specifies in which way the radio access bearer shall be treated in case of relocation **Usage:**

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAB parameters				
				Lossless : lossless relocation is required for this RAB

Range Bound	Explanation
nbr-SeparateTrafficDirection	Number of Traffic Directions being signalled separately. Set to 2 if RAB asymmetry indicator is asymmetric bidirectional. Set to 1 in all other cases.

Range Bound	Explanation
maxRABSubflows	Maximum n~~N~~umber of ~~RAB~~ Subflows per RAB. Value is 7.

Condition	Explanation
IftrafficConv-Stream	This IE is only present when traffic class indicates “Conversational” or “Streaming”
IftrafficInteractiv	This IE is only present when traffic class indicates “Interactive”
IfPS	This IE is only present for RABs towards the PS domain.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SDU parameters				
>SDU Error Ratio~~>SDU Error Ratio~~	C-ifErroneousSDU			**Desc.:** This IE indicates the fraction of SDUs lost or detected as erroneous. This is a Reliability attribute **Usage:** The attribute is coded as follows: Mantissa * 10 $^{-\text{exponent}}$
>>Mantissa	M		INTEGER (1..9)	
>>Exponent	M		INTEGER (1..6)	
>Residual Bit Error Ratio~~>Residual Bit Error Ratio~~	M			**Desc.:** This IE indicates the undetected bit error ratio for each subflow in the delivered SDU. This is a Reliability attribute. **Usage:** The attribute is coded as follows: Mantissa * 10 $^{-\text{exponent}}$
>>Mantissa	M		INTEGER (1..9)	
>>Exponent	M		INTEGER (1..8)	
>Delivery Of Erroneous SDU	M		ENUMERATED (yes, no, no-error-detection-consideration)	**Desc.:** This IE indicates whether SDUs with detected errors shall be delivered or not. In case of unequal error protection, the attribute is set per subflow This is a Reliability attribute **Usage:** Yes: error detection applied, erroneous SDU delivered No. Error detection is applied , erroneous SDU discarded no-error-detection-consideration: SDUs delivered without considering error detection
>SDU format information Parameter	C - ifratecontrollableRAB	1 to <maxRABSubflowCombinations>	See below	**Desc.:** This IE contains the list of possible exact sizes of SDUs and/or RAB Subflow Combination bit rates. Given per RAB Subflow Combination with first occurence corresponding to RAB Subflow

				Combination number 1.

Range Bound	Explanation
maxRABSubflowCombinations	Maximum nNumber of RAB Subflow Combinations. Value is 64.

Condition	Explanation
IfErroneousSDU	This IE is not present when Delivery Of Erroneous SDU is set to "no-error-detection-consideration "
IfratecontrollableRAB	When signalled, this IE indicates that the RAB is rate controllable

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SDU Format Information Parameter				
>Subflow SDU Size	C-ifalone		INTEGER (0…4095)	**Desc.:** This IE indicates the exact size of the SDU. The unit is: bit. **Usage:** This IE is only used for RABs that have predefined SDU size(s). It shall be present for RABs having more than one subflow. When this IE is not present and SDU format information Parameter is present, then the Subflow SDU size for the only existing subflow takes the value of the IE Maximum SDU size.
>RAB Subflow Combination Bit Rate	C-ifalone		INTEGER (0..16,000,000)	**Desc.**: This IE indicates the RAB Subflow Combination bit rate. The unit is: bit/s. **Usage:** This IE is only present for RABs that have predefined rate controllable bit rates. When this IE is not present and SDU format information parameter is present then all Subflow SDUs are transmitted (when there is data to be transmitted) at a constant time interval. The value of this IE shall not exceed the maximum value of the IEs 'Maximum Bit Rate'. The value 0 of RAB Subflow Combination bitrate indicates that the RAB uses discontinuous transfer of the SDUs.

Condition	Explanation
Ifalone	At least either of Subflow SDU size IE or RAB Subflow Combination bit rate IE shall be present when SDU format information parameter is present

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Allocation/Retention Priority				
>Priority Level	M		INTEGER {spare (0), highest (1), lowest (14), no priority used (15)} (0..15)	**Desc.**: This IE indicates the priority of the request. **Usage:** The priority level and the preemption indicators may be used to determine whether the request has to be performed unconditionally and immediately
>Pre-emption Capability	M		ENUMERATED(shall not trigger pre-emption, may trigger pre-emption)	**Descr.:** This IE indicates the pre-emption capability of the request on other RABs **Usage:** The RAB shall not pre-empt other RABs or, the RAB may pre-empt other RABs The Pre-emption Capability indicator applies to the allocation of resources for a RAB and as such it provides the trigger to the pre-emption procedures/processes of the RNS.
>Pre-emption Vulnerability	M		ENUMERATED(not pre-emptable, pre-emptable)	**Desc.:** This IE indicates the vulnerability of the RAB to preemption of other RABs. **Usage**: The RAB shall not be pre-empted by other RABs or the RAB may be pre-empted by other RABs. Pre-emption Vulnerability indicator applies for the entire duration of the RAB, unless modified and as such indicates whether the RAB is a target of the pre-emption procedures/processes of the RNS
>Queuing Allowed	M		ENUMERATED(queuing not allowed, queuing allowed)	**Desc.:** This IE indicates whether the request can be placed into a resource allocation queue or not. **Usage:** Queuing of the RAB is allowed Queuing of the RAB is not allowed Queuing allowed indicator applies for the entire duration of the RAB, unless modified.

3GPP TSG-RAN WG3 Meeting #19 **R3-010741**
Cardiff, UK, Feb 26th – March 2nd, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **257** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Incomplete explanation of condition"IfNotOnlyNSI".
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-02-19
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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 explanation of the condition "IfNotOnlyNSI" used for RAB ASSIGNMENT REQUEST is incomplete. It should be explained also when the IE group using this condition must be present and not only when it must not be present.
Summary of change:	⌘	The explanation for the condition "IfNotOnlyNSI" is changed. One editorial correction is also made.
Consequences if not approved:	⌘	It will not be clear when the IE group using the condition "IfNotOnlyNSI" must be present. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	9.1.3, 9.3.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.1.3 RAB ASSIGNMENT REQUEST

This message is sent by the CN to request the establishment, modification or release of one or more RABs for the same UE.

Direction: CN → RNC.

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	ignore
RABs To Be Setup Or Modified	C – ifNoOtherGroup	0 to <maxnoofRABs>			EACH	ignore
>First Setup Or Modify Item	M			Grouping reason: same criticality	YES	reject
>>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.	-	
>>NAS Synchronisation Indicator	C-ifModifandNASInfoProvided		9.2.3.18		-	
>>RAB Parameters	C - ifSetuporNewValues		9.2.1.3	Includes all necessary parameters for RABs (both for MSC and SGSN) including QoS.	-	
>>User Plane Information	C - ifSetup				-	
>>>User Plane Mode	M		9.2.1.18		-	
>>>UP Mode Versions	M		9.2.1.19		-	
>>Transport Layer Information	C- ifNot OnlyNSI				-	
>>>Transport Layer Address	M		9.2.2.1		-	
>>>Iu Transport Association	M		9.2.2.2		-	
>>Service Handover	O		9.2.1.41		-	
>Second Setup Or Modify Item	M			Grouping reason: same criticality	YES	ignore
>> PDP Type Information	C – ifPSandSetup		9.2.1.40		-	
>>Data Volume Reporting Indication	C – ifPSandSetup		9.2.1.17		-	
>>DL GTP-PDU Sequence Number	C-ifAvailPSandSetup		9.2.2.3		-	
>>UL GTP-PDU Sequence Number	C-ifAvailPSandSetup		9.2.2.4		-	
>>DL N-PDU Sequence Number	C-ifAvailPSandSetup		9.2.1.33		-	
>>UL N-PDU Sequence Number	C-ifAvailPSandSetup		9.2.1.34		-	
RABs To Be Released	C – ifNoOtherGroup	0 to <maxnoofRABs>			EACH	ignore
>RAB ID	M		9.2.1.2	The same	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				RAB ID must only be present in one group.		
>Cause	M		9.2.1.4		-	

Condition	Explanation
IfPSandSetup	This IE is only present for RABs towards the PS domain at RAB establishment.
IfAvailPSandSetup	This IE is only present when available for RABs towards the PS domain at RAB establishment.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.
IfModifandNASInfoProvided	This IE is present at a RAB modification if the relevant NAS information is provided by the CN.
IfSetup	This IE or IE group is present only at a RAB establishment.
IfSetuporNewValues	This IE or IE group is present at a RAB establishment or when any previously set value shall be modified at a RAB modification.
IfNotOnlyNSI	This IE group is~~must not be~~ present at a RAB establishment, and may be present at a RAB modification if ~~the only other IEs included at a RAB modification are~~ at least one more IE than the RAB ID IE and the NAS Syncronisation Indicator IE is also included.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

9.3.3 PDU Definitions

```
-- **************************************************************
--
-- PDU definitions for RANAP.
--
-- **************************************************************
```

****** LOTS OF UNAFFECTED ASN.1 DESCRIPTION FROM SECTION 9.3.3 REMOVED ******

```
-- **************************************************************
--
-- RAB Assignment Request
--
-- **************************************************************

RAB-AssignmentRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-AssignmentRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-AssignmentRequestExtensions} }        OPTIONAL,
    ...
}

RAB-AssignmentRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupOrModifyList           CRITICALITY ignore  TYPE RAB-SetupOrModifyList       PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --           } |
    { ID id-RAB-ReleaseList             CRITICALITY ignore  TYPE RAB-ReleaseList               PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --           },
    ...
}

RAB-SetupOrModifyList                   ::= RAB-IE-ContainerPairList { {RAB-SetupOrModifyItem-IEs} }

RAB-SetupOrModifyItem-IEs RANAP-PROTOCOL-IES-PAIR ::= {
    { ID id-RAB-SetupOrModifyItem           FIRST CRITICALITY  reject   FIRST TYPE  RAB-SetupOrModifyItemFirst
                            SECOND CRITICALITY ignore   SECOND TYPE RAB-SetupOrModifyItemSecond
                                                            PRESENCE mandatory  },
    ...
}

RAB-SetupOrModifyItemFirst ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    nAS-SynchronisationIndicator    NAS-SynchronisationIndicator    OPTIONAL
    -- This IE is present at a RAB modification if the relevant NAS information is provided by the CN --,
    rAB-Parameters                  RAB-Parameters      OPTIONAL
    -- This IE is present at a RAB establishment or when any previously set value shall be modified at a RAB modification --,
    userPlaneInformation                UserPlaneInformation        OPTIONAL
    -- This IE is present only at a RAB establishment --,
```

```
    transportLayerInformation               TransportLayerInformation      OPTIONAL
    -- This IE ismust not be present at a RAB establishment, and may be present at a RAB modification if the only other IEs included at a RAB
modification areat least one more IE than the RAB ID IE and the NAS Syncronisation Indicator IE is also included--,
    service-Handover                    Service-Handover            OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemFirst-ExtIEs} }       OPTIONAL,
    ...
}

TransportLayerInformation ::= SEQUENCE {
    transportLayerAddress           TransportLayerAddress,
    iuTransportAssociation          IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {TransportLayerInformation-ExtIEs} }        OPTIONAL,
    ...
}

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

RAB-SetupOrModifyItemFirst-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-SetupOrModifyItemSecond ::= SEQUENCE {
    pDP-TypeInformation             PDP-TypeInformation             OPTIONAL
    -- This IE is only present for RABs towards the PS domain at RAB establishment --,
    dataVolumeReportingIndication           DataVolumeReportingIndication   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain at RAB establishment --,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemSecond-ExtIEs} }      OPTIONAL,
    ...
}

RAB-SetupOrModifyItemSecond-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-AssignmentRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

3GPP TSG-RAN WG3 Meeting #19 **R3-010742**
Cardiff, UK, Feb 26th – March 2nd, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **258** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Handling for SRNS Context Response at unavailable seq. no.s.
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-02-07
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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 SRNS CONTEXT RESPONSE message includes two IE groups, i.e. “RABs Contexts” and “RABs Contexts Failed to Transfer”. In “RABs Contexts” the RAB ID and the GTP-PDU/N-PDU sequence numbers are included if available. This means that for a RAB Context where no sequence numbers are available, only the RAB ID will be included. In chapter 8.11.3 it is, however, stated that in the case when there are no sequence numbers to report, this shall be considered as an Unsuccessful Operation and reported within “RABs Contexts Failed to Transfer”. This ambiguity needs to be removed. This CR proposes a solution to this.
Summary of change:	⌘	Description of handling of RAB Contexts at unavailable sequence number is clarified.
Consequences if not approved:	⌘	Two different ways to report RAB Contexts with unavailable sequence numbers in SRNS CONTEXT RESPONSE will be included in RANAP. This will lead to incompatible implementations. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	8.11.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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Below is a brief summary:

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.11 SRNS Context Transfer

8.11.1 General

The purpose of the SRNS Context Transfer procedure is to trigger the transfer of SRNS contexts from the source RNC to the CN (PS domain) in case of inter-system forward handover. The procedure uses connection oriented signalling.

8.11.2 Successful Operation

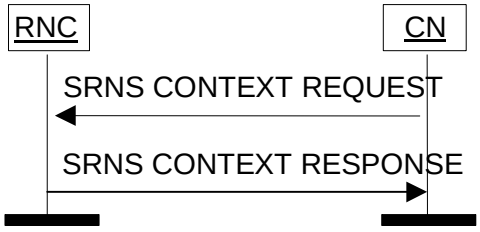

Figure 1: SRNS Context Transfer procedure. Successful operation.

The CN shall initiate the procedure by sending a SRNS CONTEXT REQUEST message to the source RNC. The SRNS CONTEXT REQUEST message shall include the list of RABs whose contexts should be transferred.

The source RNC shall respond to the CN with a SRNS CONTEXT RESPONSE message containing the RAB Context information for the referenced RABs. For each RAB, the following information elements shall be included:

- RAB ID;
- always when available, the sequence number for the next downlink GTP-PDU to be sent to the UE i.e. DL GTP-PDU Sequence Number;
- always when available, the sequence number for the next uplink GTP-PDU to be tunnelled to the GGSN i.e. UL GTP-PDU Sequence Number;
- always when available, the radio interface sequence number (PDCP) [17] of the next downlink N-PDU (PDCP SDU) that would have been sent to the UE by a source system i.e. *DL N-PDU Sequence Number* IE;
- always when available, the radio interface sequence number (PDCP) [17] of the next uplink N-PDU (PDCP SDU) that would have been expected from the UE by a source system i.e. *UL N-PDU Sequence Number* IE.

Transmission and reception of the SRNS CONTEXT RESPONSE message shall terminate the procedure in the UTRAN and the CN respectively.

8.11.3 Unsuccessful Operation

The RAB ID for each RAB for which UTRAN is not able to transfer the RAB context, e.g. if ~~no sequence numbers are available~~a RAB ID is unknown to the RNC, is included in the SRNS CONTEXT RESPONSE message together with a *Cause* IE, e.g. "Invalid RAB ID~~", "Requested Information Not Available~~".

8.11.4 Abnormal Conditions

Not applicable.

3GPP TSG-RAN WG3 Meeting #19 **R3-010761**
Cardiff, South Wales, UK, 26th February –2nd March 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **260** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Handling of the Procedures Triggering an Error Indication Procedure
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ February, 2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	In the current RANAP specification it is not 100% clear what happens to a procedure that triggers an Error Indication.
Summary of change:	⌘	The CR clarifies that when a procedure triggers the Error Indication procedure in any of the following cases the "triggering" procedure shall be terminated: a) Not comprehended IE (other than the Procedure Code) with criticality set to "reject", b) Missing IE with criticality set to "reject", c) IE in wrong order or with too many occurrences, and d) Logical Error.
Consequences if not approved:	⌘	If this CR is not approved the above described unclear description will remain in the specification. Backward compatibility: This CR is backward compatible with the previous version of RANAP.

Clauses affected:	⌘	10.
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

10 Handling of Unknown, Unforeseen and Erroneous Protocol Data

10.1 General

Protocol Error cases can be divided into three classes:

- Transfer Syntax Error.
- Abstract Syntax Error.
- Logical Error.

Protocol errors can occur in the following functions within a receiving node:

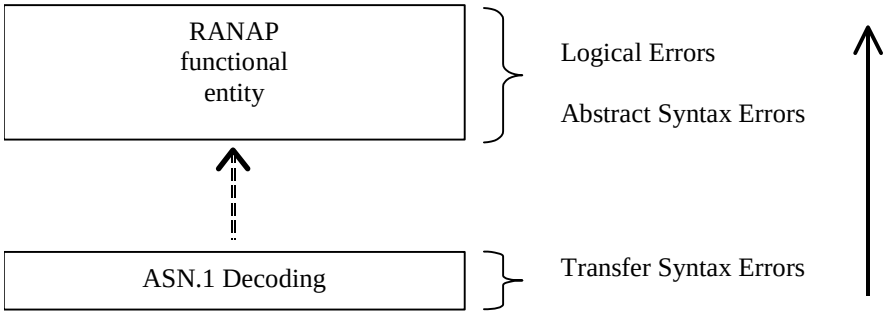


Figure 1: Protocol Errors in RANAP.

10.2 Transfer Syntax Error

A Transfer Syntax Error occurs when the receiver is not able to decode the received physical message. Transfer syntax errors are always detected in the process of ASN.1 decoding. If a Transfer Syntax Error occurs, the receiver should initiate Error Indication procedure with appropriate cause value for the Transfer Syntax protocol error.

Examples for Transfer Syntax Errors are:

- Violation of value ranges in ASN.1 definition of messages. e.g.: If an IE has a defined value range of 0 to 10 (ASN.1: INTEGER (0..10)), and 12 will be received, then this will be treated as a transfer syntax error.
- Violation in list element constraints. e.g.: If a list is defined as containing 1 to 10 elements, and 12 elements will be received, than this case will be handled as a transfer syntax error.
- Missing mandatory elements in ASN.1 SEQUENCE definitions (as sent by the originator of the message).
- Wrong order of elements in ASN.1 SEQUENCE definitions (as sent by the originator of the message).

10.3 Abstract Syntax Error

10.3.1 General

An Abstract Syntax Error occurs when the receiving functional RANAP entity:

1. receives IEs or IE groups that cannot be understood (unknown IE ID);

2. receives IEs for which the logical range is violated (e.g.: ASN.1 definition: 0 to 15, the logical range is 0 to 10 (values 11 to 15 are undefined), and 12 will be received; this case will be handled as an abstract syntax error using criticality information sent by the originator of the message);

3. does not receive IEs or IE groups but according to the specified presence of the concerning object, the IEs or IE groups should have been present in the received message.

4. receives IEs or IE groups that are defined to be part of that message in wrong order or with too many occurrences of the same IE or IE group

Cases 1 and 2 (not comprehended IE/IE group) are handled based on received Criticality information. Case 3 (missing IE/IE group) is handled based on Criticality information and Presence information for the missing IE/IE group specified in the version of the specification used by the receiver. Case 4 (IEs or IE groups in wrong order or with too many occurrences) results in rejecting the procedure.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error that belong to cases 1-3 act according to the Criticality Information and Presence Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclauses 10.3.4 and 10.3.5. The handling of case 4 is specified in subclause 10.3.6.

10.3.2 Criticality Information

In the RANAP messages there is criticality information set for individual IEs and/or IE groups. This criticality information instructs the receiver how to act when receiving an IE or an IE group that is not comprehended, i.e. the entire item (IE or IE group) which is not (fully or partially) comprehended shall be treated in accordance with its own criticality information as specified in chapter 10.3.4.

In addition, the criticality information is used in case of the missing IE/IE group abstract syntax error (see subclause 10.3.5).

The receiving node shall take different actions depending on the value of the Criticality Information. The three possible values of the Criticality Information for an IE/IE group are:

- Reject IE.
- Ignore IE and Notify Sender.
- Ignore IE.

The following rules restrict when a receiving entity may consider an IE, an IE group, or an EP not comprehended (not implemented), and when action based on criticality information is applicable:

1. IE or IE group: When one new or modified IE or IE group is implemented for one EP from a standard version, then other new or modified IEs or IE groups specified for that EP in that standard version shall be considered comprehended by a receiving entity (some may still remain unsupported).

   Note that this restriction is not applicable to a sending entity for constructing messages.

2. EP: The comprehension of different EPs within a standard version or between different standard versions is not mandated. Any EP that is not supported may be considered not comprehended, even if another EP from that standard version is comprehended, and action based on criticality shall be applied.

10.3.3 Presence Information

For many IEs/IE groups which are optional according to the ASN.1 transfer syntax, RANAP specifies separately if the presence of these IEs/IE groups is optional or mandatory with respect to RNS application by means of the presence field of the concerning object of class RANAP-PROTOCOL-IES, RANAP-PROTOCOL-IES-PAIR, RANAP-PROTOCOL-EXTENSION or RANAP-PRIVATE-IES.

The presence field of the indicated classes supports three values:

1. Optional;
2. Conditional;
3. Mandatory.

If an IE/IE group is not included in a received message and the presence of the IE/IE group is mandatory or the presence is conditional and the condition is true according to the version of the specification used by the receiver, an abstract syntax error occurs due to a missing IE/IE group.

10.3.4 Not comprehended IE/IE group

10.3.4.1 Procedure Code

The receiving node shall treat the different types of received criticality information of the *Procedure Code* IE according to the following:

Reject IE:

- If a message is received with a *Procedure Code* IE marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall reject the procedure using the Error Indication procedure.

Ignore IE and Notify Sender:

- If a message is received with a *Procedure Code* IE marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the procedure and initiate the Error Indication procedure.

Ignore IE:

- If a message is received with a *Procedure Code* IE marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the procedure.

When using the Error Indication procedure to reject a procedure or to report an ignored procedure it shall include the *Procedure Code* IE, the *Triggering Message* IE, and the *Procedure Criticality* IE in the *Criticality Diagnostics* IE.

10.3.4.2 IEs other than the Procedure Code

The receiving node shall treat the different types of received criticality information of an IEs/IE group other than the *Procedure Code* IE according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE group marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more IEs/IE group using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more IEs/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall terminate the procedure and initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*", that the receiving node does not comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored.

- if a message *initiating* a procedure that does not have a message to report the outcome of the procedure is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using the understood IEs/IE groups, and initiate the Error Indication procedure to report that one or more IEs/IE groups have been ignored.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using the understood IEs/IE groups.

When reporting not comprehended IEs/IE groups marked with "*Reject IE*" or "*Ignore IE and Notify Sender*" using a response message defined for the procedure, the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group. The *Repetition Number* IE shall be included in the *Information Element Criticality Diagnostics* IE if the reported IE/IE group was part of a "SEQUENCE OF" definition.

When reporting not comprehended IEs/IE groups marked with "*Reject IE*" or "*Ignore IE and Notify Sender*" using the Error Indication procedure, the *Procedure Code* IE, the *Triggering Message* IE, *Procedure Criticality* IE, and the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group. The *Repetition Number* IE shall be included in the *Information Element Criticality Diagnostics* IE if the reported IE/IE group was part of a "SEQUENCE OF" definition.

10.3.5 Missing IE or IE group

The receiving node shall treat the missing IE/IE group according to the criticality information for the missing IE/IE group in the received message specified in the version of this specification used by the receiver:

Reject IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Reject IE*"; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the missing IEs/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- if a received message *initiating* a procedure that does not have a message to report unsuccessful outcome is missing one or more IEs/IE groups with specified criticality "*Reject IE*", the receiving node shall terminate the procedure and initiate the Error Indication procedure.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Reject IE*, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and report in the response message of the procedure that one or more IEs/IE groups were missing.

- if a received message *initiating* a procedure that does not have a message to report the outcome of the procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and initiate the Error Indication procedure to report that one or more IEs/IE groups were missing.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall initiate the Error Indication procedure.

Ignore IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message.

When reporting missing IEs/IE groups with specified criticality "*Reject IE*" or "*Ignore IE and Notify Sender*" using a response message defined for the procedure, the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group.

When reporting missing IEs/IE groups with specified criticality "*Reject IE*" or "*Ignore IE and Notify Sender*" using the Error Indication procedure, the *Procedure Code* IE, the *Triggering Message* IE, *Procedure Criticality* IE, and the *Information Element Criticality Diagnostics* IE shall be included in the *Criticality Diagnostics* IE for each reported IE/IE group.

10.3.6 IEs or IE groups received in wrong order or with too many occurrences

If a message with IEs or IE groups in wrong order or with too many occurrences is received, the receiving node shall behave according to the following:

- If a message *initiating* a procedure is received containing IEs or IE groups in wrong order or with too many occurrences, none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the cause value "Abstract Syntax Error (Falsely Constructed Message)" using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing IEs or IE groups in wrong order or with too many occurrences, the receiving node shall terminate the procedure and initiate the Error Indication procedure, and use cause value "Abstract Syntax Error (Falsely Constructed Message)".

- If a *response* message is received containing IEs or IE groups in wrong order or with too many occurrences, the receiving node shall initiate local error handling.

10.4 Logical Error

Logical error situations occur when a message is comprehended correctly, but the information contained within the message is not valid (i.e. semantic error), or describes a procedure which is not compatible with the state of the receiver. In these conditions, the following behaviour shall be performed (unless otherwise specified) as defined by the class of the elementary procedure, irrespective of the criticality information of the IEs/IE groups containing the erroneous values.

Class 1:

Where the logical error occurs in a request message of a class 1 procedure, and the procedure has a failure message, the failure message shall be sent with an appropriate cause value. Typical cause values are:

- Semantic Error.

- Message not compatible with receiver state.

Where the logical error is contained in a request message of a class 1 procedure, and the procedure does not have a failure message, the procedure shall be terminated and the Error Indication procedure shall be initiated with an appropriate cause value.

Where the logical error exists in a response message of a class 1 procedure, local error handling shall be initiated.

Class 2:

Where the logical error occurs in a message of a class 2 procedure, the procedure shall be terminated and the Error Indication procedure shall be initiated with an appropriate cause value.

Class 3:

Where the logical error occurs in a request message of a class 3 procedure, and the procedure has a failure message, the failure message shall be sent with an appropriate cause value. Typical cause values are:

- Semantic Error.
- Message not compatible with receiver state.

Where the logical error is contained in a request message of a class 3 procedure, and the procedure does not have a failure message, the procedure shall be terminated and the Error Indication procedure shall be initiated with an appropriate cause value.

Where the logical error exists in a response message of a class 3 procedure, local error handling shall be initiated.

3GPP TSG-RAN WG3 Meeting #19
Cardiff, WALES, 26 February- 2 March 2001

Tdoc R3-010803

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **261** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	User Plane Information for RAB modification
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 22.2.2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	User Plane Mode Information (i e User Plane Mode and UP Mode Versions) is missing from the list of parameters for each RAB requested to modify. It is however possible that the user plane mode should be changed during RAB modification from "support mode for predefined SDU sizes" to "transparent mode", if e.g. the user sets ongoing speech call on hold and initiates a transparent data call, CC level Stream Id remaining the same as before, leading to modification over an already existing RAB ID.
Summary of change:	⌘	User Plane Mode Information (i e User Plane Mode and UP Mode Versions) has been added to the list of parameters for each RAB requested to modify.
Consequences if not approved:	⌘	If this CR is not approved, it is not possible to indicate the change of User Plane Mode Information when RAB is modified and the user plane mode should also be changed. This CR has no effect on backward compatibility.

Clauses affected:	⌘	8.2.2, 9.1.3 and 9.3.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

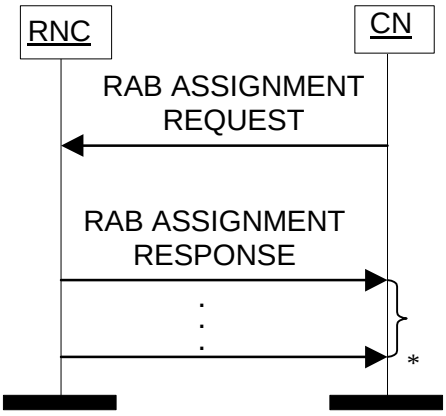
How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.2.2 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 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.
- RAB parameters (including e.g. Allocation/Retention Priority).
- User Plane Mode Information (i e User Plane Mode and UP Mode Versions).
- Transport Layer Address.
- Iu Transport Association.
- 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 handover from GPRS to UMTS or when establishing a RAB for an existing PDP context).
- UL GTP-PDU sequence number (only when GTP-PDU sequence number is available in cases of handover from GPRS to UMTS or when establishing a RAB for an existing PDP context).
- DL N-PDU sequence number (only when N-PDU sequence number is available in case of handover from GPRS to UMTS).

- UL N-PDU sequence number (only when N-PDU sequence number is available in case of handover from GPRS to UMTS).

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

- RAB ID (mandatory).
- NAS Synchronisation Indicator.
- RAB parameters.
- User Plane Mode Information (i e User Plane Mode and UP Mode Versions).
- Transport Layer Address.
- Iu Transport Association.

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 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 used" 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 handovers.

If the *Service Handover* IE is not included, the decision whether to perform a 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.

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. The transport network control plane signalling shall use the *Transport Layer Address* IE and *Iu Transport Association* IE. At a RAB modification, it is up to the RNC to decide if any transport network control plane signalling shall be performed for the possibly included *Transport Layer Address* IE and *Iu Transport Association* IE or if the already existing transport bearer shall be used. If the RNC decides to establish a new transport bearer, then the switch over to this new transport bearer shall be done immediately after transport bearer establishment and initialisation of the user plane mode.

Before reporting the 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. This initialisation is described in ref.[6].

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.

Next Modified Section

9.1.3 RAB ASSIGNMENT REQUEST

This message is sent by the CN to request the establishment, modification or release of one or more RABs for the same UE.

Direction: CN → RNC.

Signalling bearer mode: Connection oriented.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.1		YES	ignore
RABs To Be Setup Or Modified	C – ifNoOtherGroup	0 to <maxnoofRABs>			EACH	ignore
>First Setup Or Modify Item	M			Grouping reason: same criticality	YES	reject
>>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.	-	
>>NAS Synchronisation Indicator	C-ifModifandNASInfoProvided		9.2.3.18		-	
>>RAB Parameters	C - ifSetuporNewValues		9.2.1.3	Includes all necessary parameters for RABs (both for MSC and SGSN) including QoS.	-	
>>User Plane Information	C - ifSetuporNewValues				-	
>>>User Plane Mode	M		9.2.1.18		-	
>>>UP Mode Versions	M		9.2.1.19		-	
>>Transport Layer Information	C- ifNotOnlyNSI				-	
>>>Transport Layer Address	M		9.2.2.1		-	
>>>Iu Transport Association	M		9.2.2.2		-	
>>Service Handover	O		9.2.1.41		-	
>Second Setup Or Modify Item	M			Grouping reason: same criticality	YES	ignore
>> PDP Type Information	C – ifPSandSetup		9.2.1.40		-	
>>Data Volume Reporting Indication	C – ifPSandSetup		9.2.1.17		-	
>>DL GTP-PDU Sequence Number	C-ifAvailPSandSetup		9.2.2.3		-	
>>UL GTP-PDU Sequence Number	C-ifAvailPSandSetup		9.2.2.4		-	
>>DL N-PDU Sequence Number	C-ifAvailPSandSetup		9.2.1.33		-	
>>UL N-PDU Sequence Number	C-ifAvailPSandSetup		9.2.1.34		-	
RABs To Be Released	C – ifNoOtherGr	0 to <maxnoofRABs>			EACH	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
	oup					
>RAB ID	M		9.2.1.2	The same RAB ID must only be present in one group.	-	
>Cause	M		9.2.1.4		-	

Condition	Explanation
IfPSandSetup	This IE is only present for RABs towards the PS domain at RAB establishment.
IfAvailPSandSetup	This IE is only present when available for RABs towards the PS domain at RAB establishment.
IfNoOtherGroup	This group must be present at least when no other group is present, i.e. at least one group must be present.
IfModifandNASInfoProvided	This IE is present at a RAB modification if the relevant NAS information is provided by the CN.
~~IfSetup~~	~~This IE or IE group is present only at a RAB establishment.~~
IfSetuporNewValue	This IE or IE group is present at a RAB establishment or when any previously set value shall be modified at a RAB modification.
IfNotOnlyNSI	This IE group must not be present if the only other IEs included at a RAB modification are the RAB ID and the NAS Syncronisation Indicator.

Range bound	Explanation
maxnoofRABs	Maximum no. of RABs for one UE. Value is 256.

Next Modified Section

9.3.3 PDU Definitions

Unmodified ASN.1 not shown

```
-- **************************************************************
--
-- RAB Assignment Request
--
-- **************************************************************

RAB-AssignmentRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {RAB-AssignmentRequestIEs} },
    protocolExtensions      ProtocolExtensionContainer { {RAB-AssignmentRequestExtensions} }        OPTIONAL,
    ...
}

RAB-AssignmentRequestIEs RANAP-PROTOCOL-IES ::= {
    { ID id-RAB-SetupOrModifyList           CRITICALITY ignore  TYPE RAB-SetupOrModifyList       PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --           } |
    { ID id-RAB-ReleaseList             CRITICALITY ignore  TYPE RAB-ReleaseList               PRESENCE conditional
    -- This group must be present at least when no other group is present, ie. at least one group must be present --           },
    ...
}

RAB-SetupOrModifyList                   ::= RAB-IE-ContainerPairList { {RAB-SetupOrModifyItem-IEs} }

RAB-SetupOrModifyItem-IEs RANAP-PROTOCOL-IES-PAIR ::= {
    { ID id-RAB-SetupOrModifyItem           FIRST CRITICALITY  reject   FIRST TYPE  RAB-SetupOrModifyItemFirst
                            SECOND CRITICALITY ignore   SECOND TYPE RAB-SetupOrModifyItemSecond
                                                        PRESENCE mandatory  },
    ...
}

RAB-SetupOrModifyItemFirst ::= SEQUENCE {
    rAB-ID                      RAB-ID,
    nAS-SynchronisationIndicator    NAS-SynchronisationIndicator    OPTIONAL
    -- This IE is present at a RAB modification if the relevant NAS information is provided by the CN --,
    rAB-Parameters                  RAB-Parameters      OPTIONAL
    -- This IE is present at a RAB establishment or when any previously set value shall be modified at a RAB modification --,
    userPlaneInformation                UserPlaneInformation        OPTIONAL
    -- This IE is present at a RAB establishment or when any previously set value shall be modified at a RAB modification~~This IE is present only at a RAB establishment~~ --,
    transportLayerInformation               TransportLayerInformation      OPTIONAL
```

```
    -- This IE must not be present if the only other IEs included at a RAB modification are the RAB ID and the NAS Syncronisation Indicator --,
    service-Handover                    Service-Handover            OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemFirst-ExtIEs} }       OPTIONAL,
    ...
}

TransportLayerInformation ::= SEQUENCE {
    transportLayerAddress           TransportLayerAddress,
    iuTransportAssociation          IuTransportAssociation,
    iE-Extensions                   ProtocolExtensionContainer { {TransportLayerInformation-ExtIEs} }        OPTIONAL,
    ...
}

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

RAB-SetupOrModifyItemFirst-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-SetupOrModifyItemSecond ::= SEQUENCE {
    pDP-TypeInformation             PDP-TypeInformation             OPTIONAL
    -- This IE is only present for RABs towards the PS domain at RAB establishment --,
    dataVolumeReportingIndication           DataVolumeReportingIndication   OPTIONAL
    -- This IE, if applicable, is only present for RABs towards the PS domain at RAB establishment --,
    dl-GTP-PDU-SequenceNumber           DL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    ul-GTP-PDU-SequenceNumber           UL-GTP-PDU-SequenceNumber   OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    dl-N-PDU-SequenceNumber             DL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    ul-N-PDU-SequenceNumber             UL-N-PDU-SequenceNumber     OPTIONAL
    -- This IE, if available, is only present for RABs towards the PS domain at RAB establishment --,
    iE-Extensions                   ProtocolExtensionContainer { {RAB-SetupOrModifyItemSecond-ExtIEs} }      OPTIONAL,
    ...
}

RAB-SetupOrModifyItemSecond-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
}

RAB-AssignmentRequestExtensions RANAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

Unmodified ASN.1 not shown

3GPP TSG-RAN WG3 Meeting #19 **R3-011083**
Cardiff, UK, Feb 26th – March 2nd, 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **263** ⌘ rev **2** ⌘ Current version: **3.4.0** ⌘

*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 ☒ Core Network ☒

Title:	⌘	Erroneous Criticality Diagnostics IE
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ 2001-03-02
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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 IE Criticality Diagnostics can't distinguish between multiple occurances of the same ASN.1 identity within one message. See also Tdoc R3-010834.
Summary of change:	⌘	The possibility to report the message structure down to the erroneous IE is introduced in the Criticality Diagnostics IE.
Consequences if not approved:	⌘	In case the same ASN.1 identity occurs in more than one place/structure within the same message, an error reported with Criticality Diagnostics for this IE will not be unambiguous. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	9.2.1.35, 9.2.1.x, 9.3.4, 9.3.6
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.2.1.35 Criticality Diagnostics

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Criticality Diagnostics				
>Procedure Code	O		INTEGER (0..255)	Procedure Code is to be used if Criticality Diagnostics is part of Error Indication procedure, and not within the response message of the same procedure that caused the error
>Triggering Message	O		ENUMERATED(initiating message, successful outcome, unsuccessful outcome, outcome)	The Triggering Message is used only if the Criticality Diagnostics is part of Error Indication procedure.
>Procedure Criticality	O		ENUMERATED(reject, ignore, notify)	This Procedure Criticality is used for reporting the Criticality of the Triggering message (Procedure). The value 'ignore' shall never be used.
Information Element Criticality Diagnostics		0 to <maxnoof errors>		
>IE Criticality	M		ENUMERATED(reject, ignore, notify)	The IE Criticality is used for reporting the criticality of the triggering IE. The value 'ignore' shall not be used.
>IE ID	M		INTEGER (0..65535)	The IE ID of the not understood or missing IE
>Repetition Number	O		INTEGER (1..256)	The repetition number of the not understood IE within the bottom most repetition level identified by the message structure IE, if applicable
>Message Structure	O		9.2.1.x	

Range bound	Explanation
maxnooferrors	Maximum no. of IE errors allowed to be reported with a single message. The value for maxnooferrors is 256.

9.2.1.x Message Structure

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message structure		1 to <maxnooflevels>		Information given per level with assigned criticality in an hierachical message structure. Given from top level down to the level above the reported level for the occured error (reported in the *Information Element Criticality Diagnostics* IE).	GLOBAL	ignore
>IE ID	M		INTEGER (0..65535)	The IE ID of this level's IE containing the not understood or missing IE.	-	
>Repetition Number	O		INTEGER (1..256)	The repetition number of this level's reported IE, if applicable	-	

Range bound	Explanation
maxnooflevels	Maximum no. of message levels to report. The value for maxnooflevels is 256.

9.3.4 Information Element Definitions

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

RANAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxNrOfErrors,
    maxNrOfPDPDirections,
    maxNrOfPoints,
    maxNrOfRABs,
    maxNrOfSeparateTrafficDirections,
    maxRAB-Subflows,
    maxRAB-SubflowCombination,
    maxNrOfLevels,

    id-MessageStructure

FROM RANAP-Constants

    Criticality,
    ProcedureCode,
    ProtocolIE-ID,
    TriggeringMessage
FROM RANAP-CommonDataTypes

    ProtocolExtensionContainer{},
    RANAP-PROTOCOL-EXTENSION
FROM RANAP-Containers;

-- A

AllocationOrRetentionPriority ::= SEQUENCE {
    priorityLevel           PriorityLevel,
    pre-emptionCapability       Pre-emptionCapability,
    pre-emptionVulnerability    Pre-emptionVulnerability,
    queuingAllowed          QueuingAllowed,
    iE-Extensions           ProtocolExtensionContainer { {AllocationOrRetentionPriority-ExtIEs} } OPTIONAL,
    ...
}

AllocationOrRetentionPriority-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

AreaIdentity ::= CHOICE {
    sAI             SAI,
    geographicalArea        GeographicalArea,
    ...
}

-- B

BindingID               ::= OCTET STRING (SIZE (4))

-- C


Cause ::= CHOICE {
    radioNetwork            CauseRadioNetwork,
    transmissionNetwork     CauseTransmissionNetwork,
    nAS             CauseNAS,
    protocol            CauseProtocol,
    misc                CauseMisc,
    non-Standard            CauseNon-Standard,
    ...
}

CauseMisc ::= INTEGER {
    om-intervention (113),
    no-resource-available (114),
    unspecified-failure (115),
    network-optimisation (116)
} (113..128)

CauseNAS ::= INTEGER {
    user-restriction-start-indication (81),
    user-restriction-end-indication (82),
    normal-release (83)
} (81..96)

CauseProtocol ::= INTEGER {
    transfer-syntax-error (97),
    semantic-error (98),
    message-not-compatible-with-receiver-state (99),
    abstract-syntax-error-reject (100),
    abstract-syntax-error-ignore-and-notify (101),
    abstract-syntax-error-falsely-constructed-message (102)

} (97..112)

CauseRadioNetwork ::= INTEGER {
    rab-pre-empted (1),
    trelocoverall-expiry (2),
    trelocprep-expiry (3),
    treloccomplete-expiry (4),
    tqueing-expiry (5),
```

```
    relocation-triggered (6),
    trellocalloc-expiry(7),
    unable-to-establish-during-relocation (8),
    unknown-target-rnc (9),
    relocation-cancelled (10),
    successful-relocation (11),
    requested-ciphering-and-or-integrity-protection-algorithms-not-supported (12),
    change-of-ciphering-and-or-integrity-protection-is-not-supported (13),
    failure-in-the-radio-interface-procedure (14),
    release-due-to-utran-generated-reason (15),
    user-inactivity (16),
    time-critical-relocation (17),
    requested-traffic-class-not-available (18),
    invalid-rab-parameters-value (19),
    requested-maximum-bit-rate-not-available (20),
    requested-guaranteed-bit-rate-not-available (21),
    requested-transfer-delay-not-achievable (22),
    invalid-rab-parameters-combination (23),
    condition-violation-for-sdu-parameters (24),
    condition-violation-for-traffic-handling-priority (25),
    condition-violation-for-guaranteed-bit-rate (26),
    user-plane-versions-not-supported (27),
    iu-up-failure (28),
    relocation-failure-in-target-CN-RNC-or-target-system(29),
    invalid-RAB-ID (30),
    no-remaining-rab (31),
    interaction-with-other-procedure (32),
    requested-maximum-bit-rate-for-dl-not-available (33),
    requested-maximum-bit-rate-for-ul-not-available (34),
    requested-guaranteed-bit-rate-for-dl-not-available (35),
    requested-guaranteed-bit-rate-for-ul-not-available (36),
    repeated-integrity-checking-failure (37),
    requested-report-type-not-supported (38),
    request-superseded (39),
    release-due-to-UE-generated-signalling-connection-release (40),
    resource-optimisation-relocation (41),
    requested-information-not-available (42),
    relocation-desirable-for-radio-reasons (43),
    relocation-not-supported-in-target-RNC-or-target-system (44),
    directed-retry (45),
    radio-connection-with-UE-Lost (46)
} (1..64)

CauseNon-Standard ::= INTEGER (129..256)

CauseTransmissionNetwork ::= INTEGER {
    signalling-transport-resource-failure (65),
    iu-transport-connection-failed-to-establish (66)
} (65..80)


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
```

```
    procedureCriticality        Criticality         OPTIONAL,
    iEsCriticalityDiagnostics       CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

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

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality       Criticality,
        iE-ID               ProtocolIE-ID,
        repetitionNumber        RepetitionNumber        OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RANAP-PROTOCOL-EXTENSION ::= {
    {   ID id-MessageStructure  CRITICALITY ignore      EXTENSION MessageStructure  PRESENCE optional    },
    ...
}

MessageStructure ::= SEQUENCE (SIZE (1..maxNrOfLevels)) OF
    SEQUENCE {
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber        OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {MessageStructure-ExtIEs} } OPTIONAL,
        ...
    }


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

9.3.6 Constant Definitions

```
-- **************************************************************
--
-- Constant definitions
--
-- **************************************************************

RANAP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) ranap (0) version1 (1) ranap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- Elementary Procedures
--
-- **************************************************************

id-RAB-Assignment                   INTEGER ::= 0
id-Iu-Release                       INTEGER ::= 1
id-RelocationPreparation            INTEGER ::= 2
id-RelocationResourceAllocation     INTEGER ::= 3
id-RelocationCancel                 INTEGER ::= 4
id-SRNS-ContextTransfer             INTEGER ::= 5
id-SecurityModeControl              INTEGER ::= 6
id-DataVolumeReport                 INTEGER ::= 7
id-Reset                            INTEGER ::= 9
id-RAB-ReleaseRequest               INTEGER ::= 10
id-Iu-ReleaseRequest                INTEGER ::= 11
id-RelocationDetect                 INTEGER ::= 12
id-RelocationComplete               INTEGER ::= 13
id-Paging                           INTEGER ::= 14
id-CommonID                         INTEGER ::= 15
id-CN-InvokeTrace                   INTEGER ::= 16
id-LocationReportingControl         INTEGER ::= 17
id-LocationReport                   INTEGER ::= 18
id-InitialUE-Message                INTEGER ::= 19
id-DirectTransfer                   INTEGER ::= 20
id-OverloadControl                  INTEGER ::= 21
id-ErrorIndication                  INTEGER ::= 22
id-SRNS-DataForward                 INTEGER ::= 23
id-ForwardSRNS-Context              INTEGER ::= 24
id-privateMessage                   INTEGER ::= 25
id-CN-DeactivateTrace               INTEGER ::= 26
id-ResetResource                    INTEGER ::= 27
id-RANAP-Relocation                 INTEGER ::= 28

-- **************************************************************
--
```

```
-- Extension constants
--
-- **************************************************************

maxPrivateIEs                       INTEGER ::= 65535
maxProtocolExtensions               INTEGER ::= 65535
maxProtocolIEs                      INTEGER ::= 65535

-- **************************************************************
--
-- Lists
--
-- **************************************************************

maxNrOfDTs                          INTEGER ::= 15
maxNrOfErrors                       INTEGER ::= 256
maxNrOfIuSigConIds                  INTEGER ::= 250
maxNrOfPDPDirections                INTEGER ::= 2
maxNrOfPoints                       INTEGER ::= 15
maxNrOfRABs                         INTEGER ::= 256
maxNrOfSeparateTrafficDirections    INTEGER ::= 2
maxNrOfVol                          INTEGER ::= 2
maxNrOfLevels                       INTEGER ::= 256

maxRAB-Subflows                     INTEGER ::= 7
maxRAB-SubflowCombination           INTEGER ::= 64

-- **************************************************************
--
-- IEs
--
-- **************************************************************

id-AreaIdentity                                 INTEGER ::= 0
id-CN-DomainIndicator                           INTEGER ::= 3
id-Cause                                        INTEGER ::= 4
id-ChosenEncryptionAlgorithm                    INTEGER ::= 5
id-ChosenIntegrityProtectionAlgorithm           INTEGER ::= 6
id-ClassmarkInformation2                        INTEGER ::= 7
id-ClassmarkInformation3                        INTEGER ::= 8
id-CriticalityDiagnostics                       INTEGER ::= 9
id-DL-GTP-PDU-SequenceNumber                    INTEGER ::= 10
id-EncryptionInformation                        INTEGER ::= 11
id-IntegrityProtectionInformation               INTEGER ::= 12
id-IuTransportAssociation                       INTEGER ::= 13
id-L3-Information                               INTEGER ::= 14
id-LAI                                          INTEGER ::= 15
id-NAS-PDU                                      INTEGER ::= 16
id-NonSearchingIndication                       INTEGER ::= 17
id-NumberOfSteps                                INTEGER ::= 18
id-OMC-ID                                       INTEGER ::= 19
id-OldBSS-ToNewBSS-Information                  INTEGER ::= 20
id-PagingAreaID                                 INTEGER ::= 21
id-PagingCause                                  INTEGER ::= 22
```

```
id-PermanentNAS-UE-ID                           INTEGER ::= 23
id-RAB-ContextItem                              INTEGER ::= 24
id-RAB-ContextList                              INTEGER ::= 25
id-RAB-DataForwardingItem                       INTEGER ::= 26
id-RAB-DataForwardingItem-SRNS-CtxReq           INTEGER ::= 27
id-RAB-DataForwardingList                       INTEGER ::= 28
id-RAB-DataForwardingList-SRNS-CtxReq           INTEGER ::= 29
id-RAB-DataVolumeReportItem                     INTEGER ::= 30
id-RAB-DataVolumeReportList                     INTEGER ::= 31
id-RAB-DataVolumeReportRequestItem              INTEGER ::= 32
id-RAB-DataVolumeReportRequestList              INTEGER ::= 33
id-RAB-FailedItem                               INTEGER ::= 34
id-RAB-FailedList                               INTEGER ::= 35
id-RAB-ID                                       INTEGER ::= 36
id-RAB-QueuedItem                               INTEGER ::= 37
id-RAB-QueuedList                               INTEGER ::= 38
id-RAB-ReleaseFailedList                        INTEGER ::= 39
id-RAB-ReleaseItem                              INTEGER ::= 40
id-RAB-ReleaseList                              INTEGER ::= 41
id-RAB-ReleasedItem                             INTEGER ::= 42
id-RAB-ReleasedList                             INTEGER ::= 43
id-RAB-ReleasedList-IuRelComp                   INTEGER ::= 44
id-RAB-RelocationReleaseItem                    INTEGER ::= 45
id-RAB-RelocationReleaseList                    INTEGER ::= 46
id-RAB-SetupItem-RelocReq                       INTEGER ::= 47
id-RAB-SetupItem-RelocReqAck                    INTEGER ::= 48
id-RAB-SetupList-RelocReq                       INTEGER ::= 49
id-RAB-SetupList-RelocReqAck                    INTEGER ::= 50
id-RAB-SetupOrModifiedItem                      INTEGER ::= 51
id-RAB-SetupOrModifiedList                      INTEGER ::= 52
id-RAB-SetupOrModifyItem                        INTEGER ::= 53
id-RAB-SetupOrModifyList                        INTEGER ::= 54
id-RAC                                          INTEGER ::= 55
id-RelocationType                               INTEGER ::= 56
id-RequestType                                  INTEGER ::= 57
id-SAI                                          INTEGER ::= 58
id-SAPI                                         INTEGER ::= 59
id-SourceID                                     INTEGER ::= 60
id-SourceRNC-ToTargetRNC-TransparentContainer   INTEGER ::= 61
id-TargetID                                     INTEGER ::= 62
id-TargetRNC-ToSourceRNC-TransparentContainer   INTEGER ::= 63
id-TemporaryUE-ID                               INTEGER ::= 64
id-TraceReference                               INTEGER ::= 65
id-TraceType                                    INTEGER ::= 66
id-TransportLayerAddress                        INTEGER ::= 67
id-TriggerID                                    INTEGER ::= 68
id-UE-ID                                        INTEGER ::= 69
id-UL-GTP-PDU-SequenceNumber                    INTEGER ::= 70
id-RAB-FailedtoReportItem                       INTEGER ::= 71
id-RAB-FailedtoReportList                       INTEGER ::= 72
id-KeyStatus                                    INTEGER ::= 75
id-DRX-CycleLengthCoefficient                   INTEGER ::= 76
id-IuSigConIdList                               INTEGER ::= 77
id-IuSigConIdItem                               INTEGER ::= 78
```

```
id-IuSigConId                                  INTEGER ::= 79
id-DirectTransferInformationItem-RANAP-RelocInf INTEGER ::= 80
id-DirectTransferInformationList-RANAP-RelocInf INTEGER ::= 81
id-RAB-ContextItem-RANAP-RelocInf              INTEGER ::= 82
id-RAB-ContextList-RANAP-RelocInf              INTEGER ::= 83
id-RAB-ContextFailedtoTransferItem             INTEGER ::= 84
id-RAB-ContextFailedtoTransferList             INTEGER ::= 85
id-GlobalRNC-ID                                INTEGER ::= 86
id-RAB-ReleasedItem-IuRelComp                  INTEGER ::= 87
id-MessageStructure                            INTEGER ::= 92

END
```

3GPP TSG-RAN WG3 Meeting #19
Cardiff, UK, Feb 26th – March 2nd, 2001

Tdoc R3-01 ***10000856***

CR-Form-v3

CHANGE REQUEST

⌘ **25.413 CR 266** ⌘ rev **1-** ⌘ Current version: **3.4.0** ⌘

*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:	⌘	Relocation Complete Clarification
Source:	⌘	R-WG3
Work item code:	⌘	***Date:*** ⌘ February ~~22~~27, 2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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:	⌘	Not clear that $T_{RELOCcomplete}$ is stopped by CN upon reception of RELOCATION COMPLETE message from UTRAN.
Summary of change:	⌘	Change text of section 8.9.2 to be clear that CN stops $T_{RELOCcomplete}$ timer upon reception of RELOCATION COMPLETE message. This CR also fixes the spelling of this timer as used in the Relocation Preparation procedure.
Consequences if not approved:	⌘	If this CR is not approved, there may be misinterpretation on whether or not $T_{RELOCcomplete}$ is stopped by CN and thus $T_{RELOCcomplete}$ may run to expiration. Additional information: The proposed change is backwards compatible.

Clauses affected:	⌘	8.9.2, 8.6.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.9 Relocation Complete

8.9.1 General

The purpose of Relocation Complete procedure is to indicate by the target RNC the completion of relocation of SRNS to the CN. Procedure shall be co-ordinated in all Iu signalling connections existing for the UE. The procedure uses connection oriented signalling.

8.9.2 Successful Operation

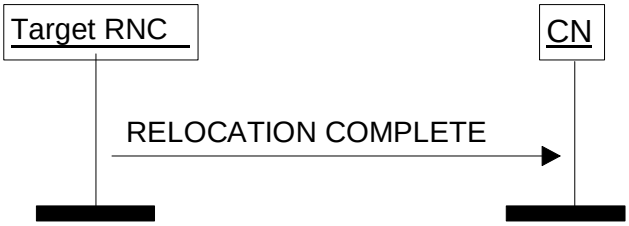


Figure 1: Relocation Complete procedure. Successful operation.

When the new SRNC-ID and serving RNC Radio Network Temporary Identity are successfully exchanged with the UE by the radio protocols, target RNC shall initiate Relocation Complete procedure by sending RELOCATION COMPLETE message to CN. Upon reception of the RELOCATION COMPLETE message by the CN, the CN should then stop the $T_{RELOCcomplete}$ timer.

8.6 Relocation Preparation

8.6.1 General

The purpose of the Relocation Preparation procedure is to prepare relocation of SRNS either with involving UE or without involving UE. The relocation procedure shall be co-ordinated in all Iu signalling connections existing for the UE in order to allow Relocation co-ordination in the target RNC. The procedure uses connection oriented signalling.

The source RNC shall not initiate the Relocation Preparation procedure for an Iu signalling connection if a Prepared Relocation exists in the RNC for that Iu signalling connection or if a Relocation Preparation procedure is ongoing for that Iu signalling connection.

8.6.2 Successful Operation

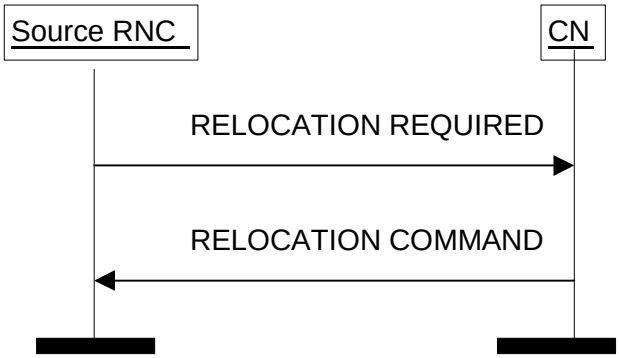


Figure 5: Relocation Preparation procedure. Successful operation.

The source RNC shall initiate the procedure by generating RELOCATION REQUIRED message. The source RNC shall decide whether to initiate the intra-system Relocation or the inter-system Relocation. 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 Relocation 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".

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

The source RNC shall indicate in the RELOCATION REQUIRED message the amount of Iu signalling connections existing for the UE by setting correctly the *Number of Iu Instances* IE included in the *Source RNC to Target RNC Transparent Container* IE. This container may also include the necessary information for Relocation co-ordination, security procedures and the handling of UE Capabilities. The container may include the RRC context to be relocated within the *RRC Container* IE. When the *Relocation Type* IE is set to "UE not involved in relocation of SRNS" and the UE is using DCH(s), DSCH(s) or USCH(s), the container shall include the mapping between each RAB subflow and transport channel identifier(s). When the RAB is carried on a DCH(s), the DCH ID(s) shall be included, and when it is carried on DSCH(s) or USCH(s), the DSCH ID(s) or USCH ID(s) respectively shall be included.

The source RNC shall send the RELOCATION REQUIRED message to the CN and the source RNC 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 RELOCATION COMMAND message to the source RNC and the CN shall start the timer $T_{RELOCcomplete}$.