3GPP TSG-RAN WG3 Meeting #107e R3-20\*\*\*\*

**24th Feb - 6th Mar 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **36.413** | **CR** | **1745** | **rev** | **1** | **Current version:** | **16.0.0** |  |
|  |
| *For* ***[HELP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <http://www.3gpp.org/Change-Requests>.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:***  | PSCell information report for EN-DC |
|  |  |
| ***Source to WG:*** | ZTE, Nokia, Nokia Shanghai Bell, China Telecom, China Unicom, CMCC |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | TEI16 |  | ***Date:*** | 2020-02-02 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B****(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | According to SA3 LS in R3-197462, the S1AP E-RAB MODIFICATION INDICATION message can be used to transport ULI with PSCell ID to the core network in the case of EN-DC.  |
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| ***Summary of change:*** | Allow the MeNB to report the PSCell information in the SgNB.Impact assessment towards the previous version of the specification (same release): The impact can be considered isolated because the change only affects the additional PSCell information report. |
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| ***Consequences if not approved:*** | More accurate positioning of the UE can not be achieved in EN-DC. |
|  |  |
| ***Clauses affected:*** | 8.2.4.2, 9.1.3.8, 9.3.3 |
| ***q*** |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.413 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | v1: Rewording the sentence. |

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| **\*\*\* First change, ommited text not changed \*\*\*** |

### 8.2.4 E-RAB Modification Indication

#### 8.2.4.1 General

The purpose of the E-RAB Modification Indication procedure is to enable the eNB to request modifications of already established E-RABs for a given UE. The procedure uses UE-associated signalling.

#### 8.2.4.2 Successful Operation



Figure 8.2.4.2-1: E-RAB Modification Indication procedure. Successful operation.

The eNB initiates the procedure by sending an E-RAB MODIFICATION INDICATION message to the MME.

The *Transport Layer Address* IE and *DL GTP TEID* IE included in the *E-RAB To Be Modified Item IEs* IE in the E-RAB MODIFICATION INDICATON message shall be considered by the MME as the new DL address of the E-RABs. The *Transport Layer Address* IE and *DL GTP TEID* IE included in the *E-RAB Not To Be Modified Item IEs* IE in the E-RAB MODIFICATION INDICATION message shall be considered by the MME as the E-RABs with unchanged DL address

If the *Secondary RAT Usage Report List* IE is included in the E-RAB MODIFICATION INDICATION message, the MME shall handle this information as specified in TS 23.401 [11].

The E-RAB MODIFICATION CONFIRM message shall contain the result for all the E-RABs that were requested to be modified according to the *E-RAB To Be Modified Item IEs* IE of the E-RAB MODIFICATION INDICATION message as follows:

- A list of E-RABs which are successfully modified shall be included in the *E-RAB Modify List* IE.

- A list of E-RABs which failed to be modified, if any, shall be included in the *E-RAB Failed to Modify List* IE.

- A list of E-RABs which are to be released, if any, shall be included in the *E-RAB To Be Released List* IE.

If the *E-RAB Failed to Modify List* IE is received in the E-RAB MODIFICATION CONFIRM message, the eNB shall either

- release all corresponding E-UTRA and E-UTRAN resources for the concerned E-RAB or

- keep the previous transport information before sending the E-RAB MODIFICATION INDICATION message unchanged for the concerned E-RAB.

If the *E-RAB To Be Released List* IE is received in the E-RAB MODIFICATION CONFIRM message, the eNB shall release all corresponding E-UTRA and E-UTRAN resources for the concerned E-RAB.

If the *CSG Membership Info* IE is included in the E-RAB MODIFICATION INDICATION message, the MME shall use the information for CSG membership verification as specified in TS 36.300 [14] and provide the result of the membership verification in the *CSG Membership Status* IE contained in the E-RAB MODIFICATION CONFIRM message.

If *PLMN Identity* IE is received in the *CSG Membership Info* IE in the E-RAB MODIFICATION INDICATION message, the MME shall use it for CSG membership verification as specified in TS 36.300 [14].

When the MME reports unsuccessful modification of an E-RAB, the cause value should be precise enough to enable the eNB to know the reason for an unsuccessful modification.

If the *Tunnel Information for BBF* IE is received in the E-RAB MODIFICATION INDICATION message, the MME shall, if supported, use it in the core network as specified in TS 23.139 [37].

If the *PSCell Information* IE is included in the *User Location Information* IE in the E-RAB MODIFICATION INDICATION message, the MME may use it to determine the UE’s location.

**Interactions with E-RAB Setup procedure or E-RAB Modify procedure:**

If the E-RAB MODIFICATION INDICATION message is received by the MME during an ongoing E-RAB Setup procedure or an ongoing E-RAB Modify procedure, the MME shall proceed with the E-RAB Modification Indication procedure.

#### 8.2.4.3 Unsuccessful Operation

The unsuccessful operation is specified in the successful operation section.

#### 8.2.4.4 Abnormal Conditions

**Interaction with UE Context Release Request procedure:**

If the E-RAB MODIFICATION INDICATION message does not contain all the E-RABs previously included in the UE Context, the MME shall trigger the UE Context Release procedure.

If the E-RAB MODIFICATION INDICATION message contains several *E-RAB ID* IEs set to the same value, the MME shall trigger the UE Context Release procedure.

If the *CSG Membership Info* IE in the E-RAB MODIFICATION INDICATION message does not contain the *Cell Access Mode* IE set to "hybrid", the MME shall trigger the UE Context Release procedure.

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| **\*\*\* Next change, skipped text not changed \*\*\*** |

#### 9.1.3.8 E-RAB MODIFICATION INDICATION

This message is sent by the eNB and is used to request the MME to apply the indicated modification for one or several E-RABs.

Direction: eNB → MME

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| **E-RAB to be Modified List** |  | *1* |  |  | YES | reject |
| **>E-RAB to Be Modified Item IEs** |  | *1 .. <maxnoofE-RABs>* |  |  | EACH | reject |
| >>E-RAB ID | M |  | 9.2.1.2 |  | - |  |
| >>Transport Layer Address | M |  | 9.2.2.1 |  | - |  |
| >>DL GTP TEID | M |  | GTP-TEID9.2.2.2 |  | - |  |
| **E-RAB not to be Modified List** |  | *0..1* |  |  | YES | reject |
| **>E-RAB not to Be Modified Item IEs** |  | *1 .. <maxnoofE-RABs>* |  |  | EACH | reject |
| >>E-RAB ID | M |  | 9.2.1.2 |  | - |  |
| >>Transport Layer Address | M |  | 9.2.2.1 |  | - |  |
| >>DL GTP TEID | M |  | GTP-TEID9.2.2.2 |  | - |  |
| **CSG Membership Info** |  | *0..1* |  |  | YES | reject |
| >CSG Membership Status | M |  | 9.2.1.73 |  | - |  |
| >CSG Id | M |  | 9.2.1.62 |  | - |  |
| >Cell Access Mode  | O |  | 9.2.1.74 |  | - |  |
| >PLMN Identity | O |  | 9.2.3.8 |  | - |  |
| Tunnel Information for BBF | O |  | Tunnel Information 9.2.2.3 | Indicating HeNB’s Local IP Address assigned by the broadband access provider, UDP port Number. | YES | ignore |
| Secondary RAT Usage Report List | O |  | 9.2.1.124 |  | Yes | ignore |
| User Location Information | O |  | 9.2.1.93 |  | Yes | ignore |

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| Range bound | Explanation |
| maxnoofE-RABs | Maximum no. of E-RAB allowed towards one UE, the maximum value is 256. |

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| **\*\*\* Next change, skipped text not changed \*\*\*** |

### 9.3.3 PDU Definitions

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-- PDU definitions for S1AP.

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-- E-RAB Modification Indication

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

E-RABModificationIndication ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { E-RABModificationIndicationIEs} },

 ...

}

E-RABModificationIndicationIEs S1AP-PROTOCOL-IES ::= {

 { ID id-MME-UE-S1AP-ID CRITICALITY reject TYPE MME-UE-S1AP-ID PRESENCE mandatory}|

 { ID id-eNB-UE-S1AP-ID CRITICALITY reject TYPE ENB-UE-S1AP-ID PRESENCE mandatory}|

 { ID id-E-RABToBeModifiedListBearerModInd CRITICALITY reject TYPE E-RABToBeModifiedListBearerModInd PRESENCE mandatory}|

 { ID id-E-RABNotToBeModifiedListBearerModInd CRITICALITY reject TYPE E-RABNotToBeModifiedListBearerModInd PRESENCE optional}|

 { ID id-CSGMembershipInfo CRITICALITY reject TYPE CSGMembershipInfo PRESENCE optional}|

-- Extension for Release 11 to support BBAI --

 { ID id-Tunnel-Information-for-BBF CRITICALITY ignore TYPE TunnelInformation PRESENCE optional}|

 { ID id-SecondaryRATDataUsageReportList CRITICALITY ignore TYPE SecondaryRATDataUsageReportList PRESENCE optional }|

{ ID id-UserLocationInformation CRITICALITY ignore TYPE UserLocationInformation PRESENCE optional },

 ...

}

E-RABToBeModifiedListBearerModInd ::= E-RAB-IE-ContainerList { {E-RABToBeModifiedItemBearerModIndIEs} }

E-RABToBeModifiedItemBearerModIndIEs S1AP-PROTOCOL-IES ::= {

 { ID id-E-RABToBeModifiedItemBearerModInd CRITICALITY reject TYPE E-RABToBeModifiedItemBearerModInd PRESENCE mandatory},

 ...

}

E-RABToBeModifiedItemBearerModInd ::= SEQUENCE {

 e-RAB-ID E-RAB-ID,

 transportLayerAddress TransportLayerAddress,

 dL-GTP-TEID GTP-TEID,

 iE-Extensions ProtocolExtensionContainer { { E-RABToBeModifiedItemBearerModInd-ExtIEs} } OPTIONAL,

 ...

}

E-RABToBeModifiedItemBearerModInd-ExtIEs S1AP-PROTOCOL-EXTENSION ::= {

 ...

}

E-RABNotToBeModifiedListBearerModInd ::= E-RAB-IE-ContainerList { {E-RABNotToBeModifiedItemBearerModIndIEs} }

E-RABNotToBeModifiedItemBearerModIndIEs S1AP-PROTOCOL-IES ::= {

 { ID id-E-RABNotToBeModifiedItemBearerModInd CRITICALITY reject TYPE E-RABNotToBeModifiedItemBearerModInd PRESENCE mandatory},

 ...

}

E-RABNotToBeModifiedItemBearerModInd ::= SEQUENCE {

 e-RAB-ID E-RAB-ID,

 transportLayerAddress TransportLayerAddress,

 dL-GTP-TEID GTP-TEID,

 iE-Extensions ProtocolExtensionContainer { { E-RABNotToBeModifiedItemBearerModInd-ExtIEs} } OPTIONAL,

 ...

}

E-RABNotToBeModifiedItemBearerModInd-ExtIEs S1AP-PROTOCOL-EXTENSION ::= {

 ...

}

CSGMembershipInfo ::= SEQUENCE {

 cSGMembershipStatus CSGMembershipStatus,

 cSG-Id CSG-Id,

 cellAccessMode CellAccessMode OPTIONAL,

 pLMNidentity PLMNidentity OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { CSGMembershipInfo-ExtIEs} } OPTIONAL,

 ...

}

CSGMembershipInfo-ExtIEs S1AP-PROTOCOL-EXTENSION ::= {

 ...

}