**3GPP RAN WG3 Meeting #122R3-237563**

**Chicago, USA, 13th – 17th November 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **37.483** | **CR** | **0093** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | Correction on multiple F1-U tunnels for MRB | | | | | | | | | |
|  |  | | | | | | | | | |
| Source to WG: | CATT, Nokia, Nokia Shanghai Bell,ZTE, Qualcomm, CMCC, CBN, Samsung, Lenovo，Huawei | | | | | | | | | |
| ***Source to TSG:*** | RAN3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MBS-Core | | | | |  | ***Date:*** | | | 2023-10-25 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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 can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For split gNB scenario,it is possible that MBS session contexts for the same MBS session are established in multiple gNB-DUs which means there maybe multiple F1-U tunnels for one MRB.However,management of mutiple F1-U tunnels for one MRB is not supported for broadcast service.  Current E1AP functionality for BC Bearer Context modification is limited as in order to enable setup of multiple F1-U bearer contexts, one per DU, every new instance of the gNB-CU-CP initiated BC Bearer Context modification procedure containing a per MRB *BC Bearer Context F1-U TNL Info at DU* IE procedure is interpreted as an addition of one (set of) new F1-U tunnel(s) (towards one gNB-DU). | | | | | | | | |
| ***.*** | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Adding a new IE “Additional F1-U TNL Info List” into “BC MRB To Modify List” into the “BC MRB To Modify Item” structure for providing TNL info at DUs.  2. Intoducing a Broadcast F1-U Context Reference in order to be able to correlate F1-U resources to the respective resources at the gNB-CU-UP.  3. For the case that one TNL info at CU is required for each F1-U tunnel, the CU-UP is still able to allocate respective resources, it could, however, allocate a single TEID per MRB as well, which is left for implementation and deployment choices.  Impact assessment towards the previous version of the specification (same release):  This CR has an isolated impact towards the previous version of the specification (same release).  This CR only has an impact on the multicast MBS session management function.  This CR is backward compatible from a protocol and functional point of view. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Management of a BC Bearer context, which is performed by means of E1AP BC Beaer Modification, would be limited, if if multiple F1-U tunnels for one broadcast MRB (towards multiple gNB-DUs) are established. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.6.1.1.2, 8.6.1.2.2, 9.3.1.114, 9.3.3.27, 9.3.3.28, 9.3.3.29, 9.4.5, 9.4.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR 38.473 CR 1243 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## Option1：

///////////////////////////////////////////////////////////////////////skip unrelated///////////////////////////////////////////////////////////////////////

8.6.1.1 BC Bearer Context Setup

8.6.1.1.1 General

The purpose of the BC Bearer Context Setup procedure is to allow the gNB-CU-CP to establish MBS session resources for a broadcast MBS session in the gNB-CU-UP. The procedure uses MBS-associated signalling.

8.6.1.1.2 Successful Operation

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**Figure 8.6.1.1.2-1: BC Bearer Context Setup procedure: Successful Operation.**

The gNB-CU-CP initiates the procedure by sending the BC BEARER CONTEXT SETUP REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to establish the requested MBS session resources, it replies to the gNB-CU-CP with the BC BEARER CONTEXT SETUP RESPONSE message.

The gNB-CU-UP shall report to the gNB-CU-CP, in the BC BEARER CONTEXT SETUP RESPONSE message, the result of all the requested resources in the following way:

- A list of BC MRBs which are successfully established shall be included in the *BC MRB Setup Response List* IE;

- A list of BC MRBs which failed to be established shall be included in the *BC MRB Failed List* IE;

- For each established BC MRB, a list of MBS QoS Flows which are successfully established shall be included in the *MBS QoS Flow Setup List* IE;

- For each established BC MRB, a list of MBS QoS Flows which failed to be established shall be included in the *MBS QoS Flow Failed List* IE;

- For each established BC MRB, if the *Broadcast F1-U Context ReferenceE1* IE was included for an MRB within the *BC MRB Setup Configuration* IE, the gNB-CU-UP shall store it to correlate future modifications and include this reference for that MRB within the *BC Bearer Context To Setup Response* IE.^ The BC Bearer Context Setup procedure establishes per MRB only one F1-U resource, which, if included, is associated with a Broadcast F1-U Context ReferenceE1.

When the gNB-CU-UP reports the unsuccessful establishment of a BC MRB or MBS QoS Flow the cause value should be precise enough to enable the gNB-CU-CP to know the reason for the unsuccessful establishment.

If the *Requested Action for Available Shared NG-U Termination* IE in the *BC Bearer Context To Setup* IE in the BC BEARER CONTEXT SETUP REQUEST message is set to

- "apply available configuration" and an appropriate Shared NG-U Termination is available, the gNB-CU-UP shall apply the radio bearer configuration of the Shared NG-U Termination, and indicate in the BC BEARER CONTEXT SETUP RESPONSE message within the *Available BC MRB Configuration* IE in the *BC Bearer Context To Setup Response* IE the radio bearer configuration of the Shared NG-U Termination, if the radio bearer configuration of the Shared NG-U Termination is different than the one requested by the gNB-CU-CP.

- "apply requested configuration" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination if the radio bearer configuration of the Shared NG-U Termination, is the same as the one requested by the gNB-CU-CP, otherwise allocate separate resources as requested by the gNB-CU-CP and indicate in the BC BEARER CONTEXT SETUP RESPONSE message within the *Available BC MRB Configuration* IE in the *BC Bearer Context To Setup Response* IE the radio bearer configuration of the Shared NG-U Termination.

- "apply available configuration if same as requested" the gNB-CU-UP shall make use of an available appropriate Shared NG-U Termination only if the radio bearer configuration of the Shared NG-U Termination is the same as the one requested by the gNB-CU-CP and reply with BC BEARER CONTEXT SETUP RESPONSE message.

8.6.1.1.3 Unsuccessful Operation

****

**Figure 8.6.1.1.3-1: BC Bearer Context Setup procedure: Unsuccessful Operation.**

If the gNB-CU-UP cannot establish the requested resources for the MBS session, it shall consider the procedure as failed and respond with the BC BEARER CONTEXT SETUP FAILURE message and an appropriate cause value.

If the *Requested Action for Available Shared NG-U Termination* IE in the *BC Bearer Context To Setup* IE in the BC BEARER CONTEXT SETUP REQUEST message is set to "apply available configuration if same as requested" and the requested configuration does not match the available shared NG-U termination, the gNB-CU UP shall reply with BC BEARER CONTEXT SETUP FAILURE message.

8.6.1.1.4 Abnormal Conditions

void.

8.6.1.2 BC Bearer Context Modification (gNB-CU-CP initiated)

8.6.1.2.1 General

The purpose of the gNB-CU-CP initiated BC Bearer Context Modification procedure is to allow the gNB-CU-CP to modify MBS session resources for a broadcast MBS session. The procedure uses MBS-associated signalling.

8.6.1.2.2 Successful Operation

****

**Figure 8.6.1.2.2-1: BC Bearer Context Modification procedure, gNB-CU-CP initiated: Successful Operation.**

The gNB-CU-CP initiates the procedure by sending the BC BEARER CONTEXT MODIFICATION REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to perform at least partially the requested modifications it replies to the gNB-CU-CP with the BC BEARER CONTEXT MODIFICATION RESPONSE message.

The gNB-CU-UP shall report to the gNB-CU-CP, in the BC BEARER CONTEXT MODIFICATION RESPONSE message, the result of all the requested MBS session resources in the following way:

- A list of BC MRBs which are successfully established or modified shall be included in the *BC MRB Setup or Modify Response List* IE;

- A list of BC MRBs which failed to be established or modified shall be included in the *BC MRB Failed List* IE;

- For each newly established or modified BC MRB, a list of MBS QoS Flows which are successfully established or modified shall be included in the *MBS QoS Flow Setup List* IE;

- For each newly established or modified BC MRB, a list of MBS QoS Flows which failed to be established or modified shall be included in the *MBS QoS Flow Failed List* IE;

- For each newly established BC MRB, as indicated in the *BC MRB To Setup List* IE, if the *Broadcast F1-U Context ReferenceE1* IE was included for an MRB within the *BC MRB Setup Configuration* IE, the gNB-CU-UP shall store it to correlate future modifications and include this reference for that MRB within the *BC Bearer Context To Setup Response* IE and include this reference for that MRB within the *BC Bearer Context To Setup Response* IE. The gNB-CU-CP initiated establishment of new BC MRBs for a broadcast session establishes per MRB only one F1-U resource, which, if included, is associated with a Broadcast F1-U Context ReferenceE1.

- If the *BC Bearer Context F1-U TNL Info at DU* IE is included for an MRB indicated in the *BC Bearer Context To Modify* IE, either within the *BC MRB To Modify List* IE or in the *Additional F1-U TNL Info List* IE, the gNB-CU-UP shall allocate respective F1-U resources and indicate in the *BC Bearer Context To Modify Response* IE the *BC Bearer Context F1-U TNL Info at CU* IE; if the *Broadcast F1-U Context ReferenceE1* IE was included for a F1-U resource for an MRB, the gNB-CU-UP shall include the same reference in the *BC Bearer Context To Modify Response* IE.

When the gNB-CU-UP reports the unsuccessful establishment of a BC MRB or MBS QoS Flow the cause value should be precise enough to enable the gNB-CU-CP to know the reason for the unsuccessful establishment.

If the *BC Bearer Context NG-U TNL Info at 5GC To Setup or Modify* IE is contained in the BC BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the previously received BC Bearer Context NG-U TNL Info at 5GC.

8.6.1.2.3 Unsuccessful Operation

****

**Figure 8.6.1.2.3-1: BC Bearer Context Modification procedure, gNB-CU-CP intiated: Unsuccessful Operation.**

If the gNB-CU-UP cannot successfully perform any of the requested modifications, it shall respond with a BC BEARER CONTEXT MODIFICATION FAILURE message and an appropriate cause value.

8.6.1.2.4 Abnormal Conditions

void.

///////////////////////////////////////////////////////////////////////skip unrelated///////////////////////////////////////////////////////////////////////

9.3.1.114 BC MRB Setup Configuration

This IE contains MRB configuration information for a BC Bearer Context Context.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| **BC MRB To Setup List** |  | *1..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >MBS PDCP Configuration | M |  | PDCP Configuration  9.3.1.38 |  | - |  |
| >MBS QoS Flows Information To Be Setup | M |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - |  |
| >MRB QoS | O |  | QoS Flow Level QoS Parameters 9.3.1.26 | Indicates the MRB QoS when more than one QoS Flow is mapped to the MRB. | - |  |
|  |  |  |  |  |  |  |
| >Broadcast F1-U Context ReferenceE1 | O |  | 9.3.1.139a |  | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

///////////////////////////////////////////////////////////////////////skip unrelated///////////////////////////////////////////////////////////////////////

#### 9.3.1.139a Broadcast F1-U Context ReferenceE1

This IE contains a reference to a Broadcast F1-U Context used within an MBS-associated logical E1-connection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Broadcast F1-U Context ReferenceE1 | M |  | OCTET STRING (SIZE(4)) | This value is allocated to uniquely denote an Broadcast F1-U Context within an MBS-associated logical E1-connection. |

///////////////////////////////////////////////////////////////////////skip unrelated///////////////////////////////////////////////////////////////////////

#### 9.3.3.27 BC Bearer Context To Setup Response

This IE contains MBS session resource related information used to confirm BC Bearer Context Setup.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| BC Bearer Context NG-U TNL Info at NG-RAN | O |  | 9.3.1.116 |  | - |  |
| **BC MRB Setup Response List** |  | *1..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >MBS QoS Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - |  |
| >MBS QoS Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - |  |
| >BC Bearer Context F1-U TNL Info at CU | M |  | 9.3.1.118 |  | - |  |
| >Broadcast F1-U Context ReferenceE1 | O |  | 9.3.1.139a |  | YES | ignore |
| **BC MRB Failed List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >Cause | M |  | 9.3.1.2 |  | - |  |
| Available BC MRB Configuration | O |  | BC MRB Setup Configuration  9.3.1.114 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

#### 9.3.3.28 BC Bearer Context To Modify

This IE contains MBS session resource related information used to request BC Bearer Context Modification.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| BC Bearer Context NG-U TNL Info at 5GC To Setup or Modify | O |  | BC Bearer Context NG-U TNL Info at 5GC  9.3.1.112 |  | - |  |
| BC MRB To Setup List | O |  | BC MRB Setup Configuration  9.3.1.114 |  | - |  |
| **BC MRB To Modify List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >BC Bearer Context F1-U TNL Info at DU | O |  | 9.3.1.119 |  | - |  |
| >MBS PDCP Configuration | O |  | PDCP Configuration  9.3.1.38 |  | - |  |
| >MBS QoS Flows Information To Be Setup | O |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - |  |
| >MRB QoS | O |  | QoS Flow Level QoS Parameters 9.3.1.26 | Indicates the MRB QoS when more than one QoS Flow is mapped to the MRB. | - |  |
| >Broadcast F1-U Context ReferenceE1 | O |  | 9.3.1.139a |  | YES | ignore |
| >**Additional F1-U TNL Info List** |  | *0..1* |  | To maintain current list if absent. | YES | ignore |
| **>>Additional F1-U TNL Info Item** |  | *1..<maxnoofDUs-1>* |  | Entire list, not only newly added. | - |  |
| >>>Broadcast F1-U Context ReferenceE1 | M |  | 9.3.1.139a |  | - |  |
| >>>BC Bearer Context F1-U TNL Info at DU | O |  | 9.3.1.119 |  | - |  |
| **BC MRB To Remove List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |
| maxnoofDUs-1 | Maximum no. of DUs in a RAN node minus one. Value is FFS. |

9.3.3.29 BC Bearer Context To Modify Response

This IE contains MBS session resource related information used to confirm a BC Bearer Context Modification.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| BC Bearer Context NG-U TNL Info at NG-RAN | O |  | 9.3.1.116 |  | - |  |
| **BC MRB Setup or Modify Response List** |  | *1..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >MBS QoS Flow Setup List | O |  | QoS Flow List  9.3.1.12 |  | - |  |
| >MBS QoS Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - |  |
| >BC Bearer Context F1-U TNL Info at CU | O |  | 9.3.1.118 |  | - |  |
| >Broadcast F1-U Context ReferenceE1 | O |  | 9.3.1.139a |  | YES | ignore |
| **>Additional F1-U TNL Info at CU List** |  | *0..1* |  | Includes only the items newly setup. | YES | ignore |
| **>>Additional F1-U TNL Info at CU Item** |  | *1..<maxnoofDUs-1>* |  |  | - |  |
| >>>Broadcast F1-U Context ReferenceE1 | M |  | 9.3.1.139a |  | - |  |
| >>>BC Bearer Context F1-U TNL Info at CU | M |  | 9.3.1.118 |  | - |  |
| **BC MRB Failed List** |  | *0..<maxnoofMRBs>* |  |  | - |  |
| >MRB ID | M |  | 9.3.1.16a |  | - |  |
| >Cause | M |  | 9.3.1.2 |  | - |  |
| Available BC MRB Configuration | O |  | BC MRB Setup Configuration  9.3.1.114 | In case the shared MBS NG-U termination had a different MRB Configuration applied. | - |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofMRBs | Maximum no. of MRBs for one MBS Session. Value is 32. |

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9.4.5 Information Element Definitions

-- ASN1START

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

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-- Information Element Definitions

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

E1AP-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) e1ap (5) version1 (1) e1ap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

id-CommonNetworkInstance,

id-SNSSAI,

id-OldQoSFlowMap-ULendmarkerexpected,

id-DRB-QoS,

id-endpoint-IP-Address-and-Port,

id-NetworkInstance,

id-QoSFlowMappingIndication,

id-TNLAssociationTransportLayerAddressgNBCUUP,

id-Cause,

id-QoSMonitoringRequest,

id-QosMonitoringReportingFrequency,

id-QoSMonitoringDisabled,

id-PDCP-StatusReportIndication,

id-RedundantCommonNetworkInstance,

id-redundant-nG-UL-UP-TNL-Information,

id-redundant-nG-DL-UP-TNL-Information,

id-RedundantQosFlowIndicator,

id-TSCTrafficCharacteristics,

id-ExtendedPacketDelayBudget,

id-CNPacketDelayBudgetDownlink,

id-CNPacketDelayBudgetUplink,

id-AdditionalPDCPduplicationInformation,

id-RedundantPDUSessionInformation,

id-RedundantPDUSessionInformation-used,

id-QoS-Mapping-Information,

id-MDTConfiguration,

id-TraceCollectionEntityURI,

id-EHC-Parameters,

id-DAPSRequestInfo,

id-EarlyForwardingCOUNTReq,

id-EarlyForwardingCOUNTInfo,

id-AlternativeQoSParaSetList,

id-MCG-OfferedGBRQoSFlowInfo,

id-Number-of-tunnels,

id-DataForwardingtoE-UTRANInformationList,

id-DataForwardingtoNG-RANQoSFlowInformationList,

id-MaxCIDEHCDL,

id-ignoreMappingRuleIndication,

id-EarlyDataForwardingIndicator,

id-QoSFlowsDRBRemapping,

id-SecurityIndicationModify,

id-DataForwardingSourceIPAddress,

id-M4ReportAmount,

id-M6ReportAmount,

id-M7ReportAmount,

id-PDUSession-PairID,

id-SurvivalTime,

id-UDC-Parameters,

id-SecurityIndication,

id-SecurityResult,

id-SDTindicatorSetup,

id-SDTindicatorMod,

id-DiscardTimerExtended,

id-MCForwardingResourceRequest,

id-MCForwardingResourceIndication,

id-MCForwardingResourceResponse,

id-MCForwardingResourceRelease,

id-MCForwardingResourceReleaseIndication,

id-PDCP-COUNT-Reset,

id-MBSSessionAssociatedInfoNonSupportToSupport,

id-VersionID,

id-MBSAreaSessionID,

id-Secondary-PDU-Session-Data-Forwarding-Information,

id-AdditionalF1U-TNL-InfoAtCU-List,

id-AdditionalF1U-TNL-Info-List,

id-BroadcastF1UContextReferenceE1,

maxnoofMBSAreaSessionIDs,

maxnoofSharedNG-UTerminations,

maxnoofMRBs,

maxnoofMBSSessionIDs,

maxnoofQoSParaSets,

maxnoofErrors,

maxnoofSliceItems,

maxnoofEUTRANQOSParameters,

maxnoofNGRANQOSParameters,

maxnoofDRBs,

maxnoofPDUSessionResource,

maxnoofQoSFlows,

maxnoofUPParameters,

maxnoofCellGroups,

maxnooftimeperiods,

maxnoofNRCGI,

maxnoofTLAs,

maxnoofGTPTLAs,

maxnoofSPLMNs,

maxnoofMDTPLMNs,

maxnoofExtSliceItems,

maxnoofDataForwardingTunneltoE-UTRAN,

maxnoofExtNRCGI,

maxnoofECGI,

maxnoofSMBRValues,

maxnoofDUs-1

FROM E1AP-Constants

Criticality,

ProcedureCode,

ProtocolIE-ID,

TriggeringMessage

FROM E1AP-CommonDataTypes

ProtocolExtensionContainer{},

ProtocolIE-SingleContainer{},

E1AP-PROTOCOL-EXTENSION,

E1AP-PROTOCOL-IES

FROM E1AP-Containers;

-- A

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

AdditionalF1U-TNL-Info-List ::= SEQUENCE (SIZE(0..maxnoofDUs-1)) OF AdditionalF1U-TNL-Info-Item

AdditionalF1U-TNL-Info-Item ::= SEQUENCE {

broadcastF1UContextReferenceE1 BroadcastF1UContextReferenceE1,

bcBearerContextF1U-TNLInfoatDU BCBearerContextF1U-TNLInfoatDU OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {AdditionalF1U-TNL-Info-Item-ExtIEs} } OPTIONAL,

...

}

AdditionalF1U-TNL-Info-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

AdditionalF1U-TNL-InfoAtCU-List ::= SEQUENCE (SIZE(1..maxnoofDUs-1)) OF AdditionalF1U-TNL-InfoAtCU-Item

AdditionalF1U-TNL-InfoAtCU-Item ::= SEQUENCE {

broadcastF1UContextReferenceE1 BroadcastF1UContextReferenceE1,

bcBearerContextF1U-TNLInfoatCU BCBearerContextF1U-TNLInfoatCU,

iE-Extensions ProtocolExtensionContainer { {AdditionalF1U-TNL-InfoAtCU-Item-ExtIEs} } OPTIONAL,

...

}

AdditionalF1U-TNL-InfoAtCU-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

-- B

-- BCBearerContextToSetup

BCBearerContextToSetup ::= SEQUENCE {

snssai SNSSAI,

bcBearerContextNGU-TNLInfoat5GC BCBearerContextNGU-TNLInfoat5GC OPTIONAL,

bcMRBToSetupList BCMRBSetupConfiguration,

requestedAction RequestedAction4AvailNGUTermination OPTIONAL,

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

...

}

BCBearerContextToSetup-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BCBearerContextNGU-TNLInfoat5GC::= CHOICE {

locationindependent MBSNGUInformationAt5GC,

locationdependent LocationDependentMBSNGUInformationAt5GC,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextNGU-TNLInfoat5GC-ExtIEs}}

}

BCBearerContextNGU-TNLInfoat5GC-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBSetupConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBSetupConfiguration-Item

BCMRBSetupConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

mbs-pdcp-config PDCP-Configuration,

qoS-Flow-QoS-Parameter-List QoS-Flow-QoS-Parameter-List,

qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {BCMRBSetupConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBSetupConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-BroadcastF1UContextReferenceE1 CRITICALITY ignore EXTENSION BroadcastF1UContextReferenceE1 PRESENCE optional},

...

}

-- BCBearerContextToSetupResponse

BCBearerContextToSetupResponse ::= SEQUENCE {

bcBearerContextNGU-TNLInfoatNGRAN BCBearerContextNGU-TNLInfoatNGRAN OPTIONAL,

bcMRBSetupResponseList BCMRBSetupResponseList,

bcMRBFailedList BCMRBFailedList OPTIONAL,

availableBCMRBConfig BCMRBSetupConfiguration OPTIONAL,

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

...

}

BCBearerContextToSetupResponse-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BCBearerContextNGU-TNLInfoatNGRAN::= CHOICE {

locationindependent MBSNGUInformationAtNGRAN,

locationdependent LocationDependentMBSNGUInformationAtNGRAN,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextNGU-TNLInfoatNGRAN-ExtIEs}}

}

BCBearerContextNGU-TNLInfoatNGRAN-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBSetupResponseList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBSetupResponseList-Item

BCMRBSetupResponseList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

qosflow-setup QoS-Flow-List,

qosflow-failed QoS-Flow-Failed-List OPTIONAL,

bcBearerContextF1U-TNLInfoatCU BCBearerContextF1U-TNLInfoatCU,

iE-Extensions ProtocolExtensionContainer { {BCMRBSetupResponseList-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBSetupResponseList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-BroadcastF1UContextReferenceE1 CRITICALITY ignore EXTENSION BroadcastF1UContextReferenceE1 PRESENCE optional}|

{ID id-AdditionalF1U-TNL-InfoAtCU-List CRITICALITY ignore EXTENSION AdditionalF1U-TNL-InfoAtCU-List PRESENCE optional},

...

}

BCBearerContextF1U-TNLInfoatCU ::= CHOICE {

locationindependent MBSF1UInformationAtCU,

locationdependent LocationDependentMBSF1UInformationAtCU,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextF1U-TNLInfoatCU-ExtIEs}}

}

BCBearerContextF1U-TNLInfoatCU-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBFailedList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBFailedList-Item

BCMRBFailedList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

cause Cause,

iE-Extensions ProtocolExtensionContainer { {BCMRBFailedList-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBFailedList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

-- BCBearerContextToModify

BCBearerContextToModify ::= SEQUENCE {

bcBearerContextNGU-TNLInfoat5GC BCBearerContextNGU-TNLInfoat5GC OPTIONAL,

bcMRBToSetupList BCMRBSetupConfiguration OPTIONAL,

bcMRBToModifyList BCMRBModifyConfiguration OPTIONAL,

bcMRBToRemoveList BCMRBRemoveConfiguration OPTIONAL,

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

...

}

BCBearerContextToModify-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BCMRBModifyConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBModifyConfiguration-Item

BCMRBModifyConfiguration-Item ::= SEQUENCE {

mrb-ID MRB-ID,

bcBearerContextF1U-TNLInfoatDU BCBearerContextF1U-TNLInfoatDU OPTIONAL,

mbs-pdcp-config PDCP-Configuration OPTIONAL,

qoS-Flow-QoS-Parameter-List QoS-Flow-QoS-Parameter-List OPTIONAL,

qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {BCMRBModifyConfiguration-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBModifyConfiguration-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-BroadcastF1UContextReferenceE1 CRITICALITY ignore EXTENSION BroadcastF1UContextReferenceE1 PRESENCE optional}|

{ID id-AdditionalF1U-TNL-Info-List CRITICALITY ignore EXTENSION AdditionalF1U-TNL-Info-List PRESENCE optional}|

...

}

BCBearerContextF1U-TNLInfoatDU ::= CHOICE {

locationindependent MBSF1UInformationAtDU,

locationdependent LocationDependentMBSF1UInformationAtDU,

choice-extension ProtocolIE-SingleContainer {{BCBearerContextF1U-TNLInfoatDU-ExtIEs}}

}

BCBearerContextF1U-TNLInfoatDU-ExtIEs E1AP-PROTOCOL-IES ::= {

...

}

BCMRBRemoveConfiguration ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MRB-ID

-- BCBearerContextToModifyResponse

BCBearerContextToModifyResponse ::= SEQUENCE {

bcBearerContextNGU-TNLInfoatNGRAN BCBearerContextNGU-TNLInfoatNGRAN OPTIONAL,

bcMRBSetupModifyResponseList BCMRBSetupModifyResponseList,

bcMRBFailedList BCMRBFailedList OPTIONAL,

availableBCMRBConfig BCMRBSetupConfiguration OPTIONAL,

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

...

}

BCBearerContextToModifyResponse-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BCMRBSetupModifyResponseList ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF BCMRBSetupModifyResponseList-Item

BCMRBSetupModifyResponseList-Item ::= SEQUENCE {

mrb-ID MRB-ID,

qosflow-setup QoS-Flow-List OPTIONAL,

qosflow-failed QoS-Flow-Failed-List OPTIONAL,

bcBearerContextF1U-TNLInfoatCU BCBearerContextF1U-TNLInfoatCU OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {BCMRBSetupModifyResponseList-Item-ExtIEs} } OPTIONAL,

...

}

BCMRBSetupModifyResponseList-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-AdditionalF1U-TNL-InfoAtCU-List CRITICALITY ignore EXTENSION AdditionalF1U-TNL-InfoAtCU-List PRESENCE optional},

...

}

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

BroadcastF1UContextReferenceE1 ::= OCTET STRING (SIZE(4))

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

-- N

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

NumberOfRequiredNewF1U-TNL-InfoAtCU ::= INTEGER (1..FFS)

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

9.4.7 Constant Definitions

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

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

--

-- Lists

--

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

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

maxnoofDUs-1 INTEGER ::= FFS

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

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

--

-- IEs

--

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

//////////////////////////////////////////////////////////skip unrelated//////////////////////////////////////////////////////////

id-AdditionalF1U-TNL-InfoAtCU-List ProtocolIE-ID ::=

id-AdditionalF1U-TNL-Info-List ProtocolIE-ID ::=

id-BroadcastF1UContextReferenceE1 ProtocolIE-ID ::=

///////////////////////////////////////////////////////////////////////end///////////////////////////////////////////////////////////////////////



























































## 