3GPP TSG-RAN WG3 #107 R3-20xxxx

Athens, Greece, 24-28 February 2020

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.463** | **CR** | 0154 | **Rev** | **5** | **Current version:** | **16.0.0** |  |
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| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_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 |  |

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| ***Title:*** | Introduction of NR\_IIOT support to TS 38.463 | | | | | | | | | |
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| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_IIOT-Core | | | | |  | ***Date:*** | | | 2020-02-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | Rev2:   1. Introducing CN PDB in E1AP to support TSC deterministic QoS, as specified in TS 23.501. 2. Support of higher layer duplication for solution 4   Rev3：Resubmit without any change.  Rev4:   1. The redundant indicator is included at the same level of QoS Flow Level QoS Parameters (R3-197761). 2. The redundant network instance is needed for transport network resource selection (R3-197761). 3. Cature the agreements in R3-197703 (R3-197703).   Rev5: Include some typo | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Rev2:   1. Introducing CN PDB in E1AP to support TSC deterministic QoS, as specified in TS 23.501. 2. Support of higher layer duplication for solution 4   Rev3: Resubmit without any change.  Rev4:   1. Configuring redundant indicator at the same level of QoS flow level QoS parameters (R3-197761). 2. Including the redundant network instance for transport network resource selection (R3-197761). 3. Include the TSC Assistance Information IE outside the QoS Flow Level QoS Parameters IE (R3-197703). 4. For the Periodicity IE, the granularity should be 1 us with maximum value of 640 ms (R3-197703). 5. For the Burst Arrival Time IE, reuse the encoding of the ReferenceTime IE defined in TS 38.331 where granularity is 1 us (i.e. refTenNanoSeconds is truncated to 1 us granularity) (R3-197703). 6. For the *CN Packet Delay Budget* IE, the granularity should be 0.01 (R3-197703) ms.   Rev5: Include some typo | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | 1. TSC deterministic QoS is not possible 2. Higher layer duplication for solution 4 is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.3.1, 8.3.2, 8.3.3, 9.3.1.25, 9.3.1.26, 9.3.1.x, 9.3.1.x, 9.3.1.x1, 9.3.1.y1, 9.3.1.y2, 9.3.1.z1, 9.3.1.z2, 9.3.3.2, 9.3.3.5, 9.3.3.10, 9.3.3.11, 9.3.3.17, 9.3.3.19, 9.3.3.23, 9.3.1.27, 9.3.1.28 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **Y** |  | Other core specifications | | | | TS 38.413, TS 38.423, TS 38.473 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev5:#107 meeting, based on R3-197828  Rev4: #106 meeting, captured the agreed TP R3-197761, R3-197703  Rev3: Resumitted based on R3-196319  Rev2: Captured the agreed TP R3-196234  Rev1: R3-196227  Rev0: R3-195055 | | | | | | | | |

*Beginning of Text Proposal for TS 38.463*

### 8.3.1 Bearer Context Setup

#### 8.3.1.1 General

The purpose of the Bearer Context Setup procedure is to allow the gNB-CU-CP to establish a bearer context in the gNB-CU-UP. The procedure uses UE-associated signalling.

#### 8.3.1.2 Successful Operation



Figure 8.3.1.2-1: Bearer Context Setup procedure: Successful Operation.

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

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

For E-UTRAN:

- A list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- A list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

For NG-RAN:

- A list of PDU Session Resources which are successfully established shall be included in the *PDU Session Resource Setup List* IE;

- A list of PDU Session Resources which failed to be established shall be included in the *PDU Session Resource Failed List* IE;

- For each established PDU Session Resource, a list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- For each established PDU Session Resource, a list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

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

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

When the gNB-CU-UP reports the unsuccessful establishment of a PDU Session Resource, DRB or 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 *Existing Allocated S1 DL UP Transport Layer Information* IE or the *Existing Allocated NG DL UP Transport Layer Information* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may re-use the indicated resources already allocated for this bearer context. If the gNB-CU-UP decides to re-use the indicated resources, it shall include the *S1 DL UP Unchanged* IE or the *NG DL UP Unchanged* IE in the BEARER CONTEXT SETUP RESPONSE message.

If the *PDU Session Resource DL Aggregate Maximum Bit Rate* IE is contained in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store and use the information for the down link traffic policing for the Non-GBR QoS flows for the concerned UE as specified in TS 23.501 [20].

If the *Data Forwarding Information Request* IE, *PDU Session Data Forwarding Information Request* IE or the *DRB Data Forwarding Information Request* IE are included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall include the requested forwarding information in the *Data Forwarding Information Response* IE, *PDU Session Data Forwarding Information Response* IE or the *DRB Data Forwarding Information Response* IE in the BEARER CONTEXT SETUP RESPONSE message.

If the *DL UP Parameters* IE is contained in the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall configure the corresponding information.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "preferred", then the gNB-CU-UP should, if supported, perform user plane integrity protection or ciphering, respectively, for the concerned PDU session and shall notify whether it performed the user plane integrity protection or ciphering by including the *Integrity Protection Result* IE or *Confidentiality Protection Result* IE, respectively, in the *PDU Session Resource Setup List* IE of the BEARER CONTEXT SETUP RESPONSE message.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "required", then the gNB-CU-UP shall perform user plane integrity protection or ciphering, respectively, for the concerned PDU Session. If the gNB-CU-UP cannot perform the user plane integrity protection or ciphering, it shall reject the setup of the PDU Session Resources with an appropriate cause value.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT SETUP REQUEST message:

- if the *Integrity Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane integrity protection for the concerned PDU session;

-if the *Confidentiality Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane ciphering for the concerned PDU session.

If the *UE DL Maximum Integrity Protected Data Rate* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall use this value when enforcing the maximum integrity protected data rate for the UE.

If the *Bearer Context Status Change* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider the UE RRC state and act as specified in TS 38.401 [2].

For each requested DRB, if the *PDCP Duplication* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT SETUP REQUEST message, and one cell group is included in *Cell Group Information* IE, then the gNB-CU-UP shall include two *UP Transport Layer Information* IEs in the BEARER CONTEXT SETUP RESPONSE message to support packet duplication for intra-gNB-DU CA. The first *UP Transport Layer Information* IE of the two *UP Transport Layer Information* IEs is for the primary path.

If the *PDCP SN Status Information* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall take it into account and act as specified in TS 38.401 [2].

If the *QoS Flow Mapping Indication* IE is contained in the *QoS Flows Information To Be Setup* IE within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

For each PDU Session Resource, if the *Network Instance* IE is included in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message and the *Common Network Instance* IE is not included, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

For each PDU session, if the *Redundant NG UL UP Transport Layer Information* IE is included in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, use it as the uplink termination point of the redundant tunnel for the user plane data of those QoS flows in this PDU session which need redundant transmission as described in TS 23.501 [20], and it shall include the *Redundant NG DL UP Transport Layer Information* IE in the *PDU Session Resource Setup List IE* in the BEARER CONTEXT SETUP RESPONSE message.

For each PDU Session Resource, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [20].

For each PDU session, if the *Redundant QoS Flow Information* IE is included in the *QoS Flow QoS Parameters List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider it for the redundant transmission.

If *UE Inactivity Timer* IE or *PDU session Inactivity Timer* IE or *DRB Inactivity Timer* IE is contained in BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall take it into account when perform inactivity monitoring.

If the *DRB QoS* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take it into account as specified in TS 28.552 [22].

If the *gNB-DU-ID* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store the information received.

If the *RAN UE ID* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall store the information received.

For each successfully established DRB, the gNB-CU-UP shall provide, in the respective *UL UP Parameters* IE of the BEARER CONTEXT SETUP RESPONSE, one UL UP Transport Layer Information Item per cell group entry contained in the respective *Cell Group Information* IE of the BEARER CONTEXT SETUP REQUEST message.

If the *Trace Activation* IE is included in the BEARER CONTEXT SETUP REQUEST message the gNB-CU-UP shall, if supported, initiate the requested trace function as described in TS 32.422 [24].

For EN-DC, if the *Subscriber Profile ID for RAT/Frequency priority* IE is included in the UE CONTEXT SETUP REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25]. If the *Additional RRM Policy Index* IE is included in the UE CONTEXT SETUP REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25].

If the *TSC Traffic Characteristics* IE is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, take into account the corresponding information received in the *TSC Traffic Characteristics* IE.

*Next of Text Proposal for TS 38.463*

### 8.3.2 Bearer Context Modification (gNB-CU-CP initiated)

#### 8.3.2.1 General

The purpose of the Bearer Context Modification procedure is to allow the gNB-CU-CP to modify a bearer context in the gNB-CU-UP. The procedure uses UE-associated signalling.

#### 8.3.2.2 Successful Operation



Figure 8.3.2.2-1: Bearer Context Modification procedure: Successful Operation.

The gNB-CU-CP initiates the procedure by sending the BEARER CONTEXT MODIFICATION REQUEST message to the gNB-CU-UP. If the gNB-CU-UP succeeds to modify the bearer context, it replies to the gNB-CU-CP with the BEARER CONTEXT MODIFICATION RESPONSE message.

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

For E-UTRAN:

- A list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- A list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

- A list of DRBs which are successfully modified shall be included in the *DRB Modified List* IE;

- A list of DRBs which failed to be modified shall be included in the *DRB Failed To Modify List* IE;

For NG-RAN:

- A list of PDU Session Resources which are successfully established shall be included in the *PDU Session Resource Setup List* IE;

- A list of PDU Session Resources which failed to be established shall be included in the *PDU Session Resource Failed List* IE;

- A list of PDU Session Resources which are successfully modified shall be included in the *PDU Session Resource Modified List* IE;

- A list of PDU Session Resources which failed to be modified shall be included in the *PDU Session Resource Failed To Modify List* IE;

- For each successfully established or modified PDU Session Resource, a list of DRBs which are successfully established shall be included in the *DRB Setup List* IE;

- For each successfully established or modified PDU Session Resource, a list of DRBs which failed to be established shall be included in the *DRB Failed List* IE;

- For each successfully modified PDU Session Resource, a list of DRBs which are successfully modified shall be included in the *DRB Modified List* IE;

- For each successfully modified PDU Session Resource, a list of DRBs which failed to be modified shall be included in the *DRB Failed To Modify List* IE;

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

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

When the gNB-CU-UP reports the unsuccessful establishment of a PDU Session Resource, DRB or 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 *Security Information* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *UE DL Aggregate Maximum Bit Rate* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *UE DL Maximum Integrity Protected Data Rate* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Bearer Context Status Change* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall consider the UE RRC state and act as specified in TS 38.401 [2].

If the *Data Forwarding Information Request* IE, *PDU Session Data Forwarding Information Request* IE or the *DRB Data Forwarding Information Request* IE are included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the requested forwarding information in the *Data Forwarding Information Response* IE, *PDU Session Data Forwarding Information Response* IE or the *DRB Data Forwarding Information Response* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDCP Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information, except for the *PDCP SN UL Size* IE, the *PDCP SN DL Size* IE and the *RLC mode* IE which shall be ignored.

If the *E-UTRAN QoS* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *PDCP SN Status Request* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the *UL COUNT Value* IE and the *DL COUNT Value* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDCP SN Status Information* IE is contained in the *DRB To Setup List* IE or the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account and act as specified in TS 38.401 [2].

If the *DL UP Parameters* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Cell Group To Add* IE or the *Cell Group To Modify* IE or the *Cell Group To Remove* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall add or modify or remove the corresponding cell group.

If the *PDU Session Resource DL Aggregate Maximum Bit Rate* IE is contained in the *PDU Session Resource To Setup List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall replace the information in the UE context and use it when enforcing downlink traffic policing for the non GBR QoS flows for the concerned UE, as specified in TS 23.501 [20].

If the *PDU Session Resource DL Aggregate Maximum Bit Rate* IE is contained in the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *SDAP Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Flow Mapping Information* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

For each requested DRB, if the *PDCP Duplication* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT MODIFICATION REQUEST message, and one cell group is included in *Cell Group Information* IE, then the gNB-CU-CP shall include two *UP Transport Layer Information* IEs in the BEARER CONTEXT MODIFICATION REQUEST message, and the gNB-CU-UP shall also include two *UP Transport Layer Information* IEs in the BEARER CONTEXT MODIFICATION RESPONSE message to support packet duplication for intra-gNB-DU CA. The first *UP Transport Layer Information* IE of the two *UP Transport Layer Information* IEs is for the primary path.

For a certain DRB which was allocated with two GTP-U tunnels, if such DRB is modified and given one GTP-U tunnel via the Bearer Context Modification (gNB-CU-CP initiated) procedure, i.e. only one UP Transport Layer Information per Cell Group ID is present in *DL UP Parameters* IE for the concerned DRB, then the gNB-CU-UP shall consider that PDCP duplication is deconfigured for this DRB. If such Bearer Context Modification (gNB-CU-CP initiated) procedure occurs, the *Duplication Activation* IE shall not be included for the concerned DRB.

If the *New UL TNL Information Required* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the new UP Transport Layer Information in the BEARER CONTEXT MODIFICATION RESPONSE message.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT MODIFICATION REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "preferred", then the gNB-CU-UP should, if supported, perform user plane integrity protection or ciphering, respectively, for the concerned PDU session and shall notify whether it performed the user plane integrity protection or ciphering by including the *Integrity Protection Result* IE or *Confidentiality Protection Result* IE, respectively, in the *PDU Session Resource Setup List* IE of the BEARER CONTEXT MODIFICATION RESPONSE message.

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Setup List* IE of the BEARER CONTEXT MODIFICATION REQUEST message, and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "required", then the gNB-CU-UP shall perform user plane integrity protection or ciphering, respectively, for the concerned PDU Session. If the gNB-CU-UP cannot perform the user plane integrity protection or ciphering, it shall reject the setup of the PDU Session Resources with an appropriate cause value.

For each PDU session for which the Security Indication IE is included in the *PDU Session Resource To Setup List* of the BEARER CONTEXT MODIFICATION REQUEST message:

- if the *Integrity Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane integrity protection for the concerned PDU session;

-if the *Confidentiality Protection Indication* IE is set to "not needed", then the gNB-CU-UP shall not perform user plane ciphering for the concerned PDU session.

For each PDU Session Resource, if the *Network Instance* IE is included in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message and the *Common Network Instance* IE is not included, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [20].

For each PDU session, if the *Redundant NG UL UP Transport Layer Information* IE is included in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, include the *Redundant NG DL UP Transport Layer Information* IE in the *PDU Session Resource Setup List* IE or the *PDU Session Resource Modified List* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *Redundant Common Network Instance* IE is included in the *PDU Session Resource To Setup List* IE or the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [20].

For each PDU session for which the *Redundant QoS Flow Information* IE is included in *QoS Flows Information To Be Setup* IE contained in the *BEARER CONTEXT MODIFICATION REQUEST* message, the gNB-CU-UP shall, if support, shall store and use it as specified in TS 23.501 [20].

If the *QoS Flow Mapping Indication* IE is contained in the *QoS Flow QoS Parameters List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, replace any previously received value and take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

If the *Data Discard Required* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message and the value is set to “Required”, the gNB-CU-UP shall consider that a RAN Paging Failure occurred for that UE. The gNB-CU-UP shall discard the user plane data for that UE and consider that the bearer context is still suspended.

If *UE Inactivity Timer* IE or *PDU session Inactivity Timer* IE or *DRB Inactivity Timer* IE is contained in BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account when perform inactivity monitoring.

If the *S-NSSAI* IE is contained in the *PDU Session Resource To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store the corresponding information and replace any existing information.

If the *DRB QoS* IE is contained within the *DRB To Setup List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, take it into account for each DRB, as specified in TS 28.552 [22].

If the *DRB QoS* IE is contained within the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, replace any previously received value and take it into account for each DRB, as specifed in TS 28.552 [22].

If the *gNB-DU-ID* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store and replace any previous information received.

If the *RAN UE ID* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall store and replace any previous information received.

If the gNB-CU-UP receives a BEARER CONTEXT MODIFICATION REQUEST message including *Activity Notification Level* IE and its value does not match the current bearer context, the gNB-CU-UP shall ignore the *Activity Notification Level* IE and also the requested modification of inactivity timer.

For each successfully established DRB, the gNB-CU-UP shall provide, in the respective *UL UP Parameters* IE of the BEARER CONTEXT MODIFICATION RESPONSE, one UL UP Transport Layer Information Item per cell group entry contained in the respective *Cell Group Information* IE of the BEARER CONTEXT MODIFICATION REQUEST message.

If the *Old QoS Flow List - UL End Marker expected* IE is included in the *PDU Session Resource To Modify List* IE of the BEARER CONTEXT MODIFICATION REQUEST message for a DRB to be modified, the gNB-CU-UP shall consider that the source NG-RAN node has initiated QoS flow re-mapping and has not yet received SDAP end markers, as described in TS 38.300 [8]. The gNB-CU-UP shall consider that the *Old QoS Flow List - UL End Marker expected* IE only contains UL QoS flow information for QoS flows for which no SDAP end marker has been yet received on the source side.

For EN-DC, if the *Subscriber Profile ID for RAT/Frequency priority* IE is included in the UE CONTEXT MODIFICATION REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25]. If the *Additional RRM Policy Index* IE is included in the UE CONTEXT MODIFICATION REQUEST, the gNB-CU-UP may use it to apply specific RRM policies as specified in TS 36.300 [25].

If there is at least one DRB removed by the gNB-CU-UP, the gNB-CU-UP shall, if supported, include the *Retainability Measurements Information* IE in the BEARER CONTEXT MODIFICATION RESPONSE message, providing information on the removed DRB(s) for retainability measurements in the gNB-CU-CP, as described in TS 32.425 [26] and TS 28.552 [22].

If the *TSC Traffic Characteristics* IE is included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall, if supported, take into account the corresponding information received in the *TSC Traffic Characteristics* IE.

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### 8.3.3 Bearer Context Modification Required (gNB-CU-UP initiated)

#### 8.3.3.1 General

The purpose of the Bearer Context Modification Required procedure is to allow the gNB-CU-UP to modify a bearer context (e.g., due to local problems) and inform the gNB-CU-CP. The procedure uses UE-associated signalling.

#### 8.3.3.2 Successful Operation



Figure 8.3.3.2-1: Bearer Context Modification Required procedure: Successful Operation.

The gNB-CU-UP initiates the procedure by sending the BEARER CONTEXT MODIFICATION REQUIRED message to the gNB-CU-CP. The gNB-CU-CP replies with the BEARER CONTEXT MODIFICATION CONFIRM message.

If the *S1 DL UP Transport Layer Information* IE or the *NG DL UP Transport Layer Information* IE or the *Redundant NG DL UP Transport Layer Information* IE is contained in the BEARER CONTEXT MODIFICATION REQUIRED message, the gNB-CU-CP shall update the corresponding information.

If the *gNB-CU-UP Cell Group Related Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUIRED message, the gNB-CU-CP shall try to change the cell group related configuration accordingly. If the gNB-CU-CP is not able to update the requested cell group related configuration, it shall include the *Cell Group Information* IE with the current cell group configuration in the *DRB Modified List* IE in the BEARER CONTEXT MODIFICATION CONFIRM message.

#### 8.3.3.3 Abnormal Conditions

Not applicable.

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9.3.1.25 QoS Flow QoS Parameters List

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| **QoS Flow List** |  | *1* |  |  | - | - |
| **>QoS Flow Item** |  | *1..<maxnoofflows>* |  |  | - | - |
| >>QoS Flow Identifier | M |  | 9.3.1.24 |  | - | - |
| >>QoS Flow Level QoS Parameters | M |  | 9.3.1.26 |  | - | - |
| >>QoS Flow Mapping Indication | O |  | 9.3.1.60 | Indicates that only the uplink or downlink QoS flow is mapped to the DRB | - | - |
| >>Redundant QoS Flow Information | O |  | 9.3.1.x | This IE indicates that this QoS flow is requested for the redundant transmission. | YES | ignore |
| >>TSC Traffic Characteristics | O |  | 9.3.1.x1 | Traffic pattern information associated with the QFI. Details in TS 23.501 [20]. | YES | ignore |

9.3.1.27 Non Dynamic 5QI Descriptor

This IE indicates the QoS Characteristics for a standardized or pre-configured 5QI for downlink and uplink.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| 5QI | M |  | INTEGER (0..255, …) | This IE contains the standardized or pre-configured 5QI as specified in TS 23.501 [20]. |
| Priority Level | O |  | 9.3.1.51 | For details see TS 23.501 [20]. When included overrides standardized or pre-configured value. |
| Averaging Window | O |  | 9.3.1.49 | This IE applies to GBR QoS Flows only. For details see TS 23.501 [20]. When included overrides standardized or pre-configured value. |
| Maximum Data Burst Volume | O |  | 9.3.1.50 | For details see TS 23.501 [20]. When included overrides standardized or pre-configured value. |
| CN Packet Delay Budget | O |  | FFS | Core Network Packet Delay Budget is specified in TS 23.501 [9]. This IE may be present in case of GBR QoS flows and is ignored otherwise. |

9.3.1.28 Dynamic 5QI Descriptor

This IE indicates the QoS Characteristics for a Non-standardised or not pre-configured 5QI for downlink and uplink.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Priority Level | M |  | 9.3.1.51 | For details see TS 23.501 [20]. |
| Packet Delay Budget | M |  | 9.3.1.47 | For details see TS 23.501 [20]. |
| Packet Error Rate | M |  | 9.3.1.48 | For details see TS 23.501 [20]. |
| 5QI | O |  | INTEGER (0..255,…) | This IE contains the dynamically assigned 5QI as specified in TS 23.501 [20]. |
| Delay Critical | C-ifGBRflow |  | ENUMERATED (delay critical, non-delay critical) | For details see TS 23.501 [20]. |
| Averaging Window | C-ifGBRflow |  | 9.3.1.49 | For details see TS 23.501 [20]. |
| Maximum Data Burst Volume | O |  | 9.3.1.50 | For details see TS 23.501 [20]. This IE shall be included if the *Delay Critical* IE is set to “delay critical” and is ignored otherwise. |
| CN Packet Delay Budget | O |  | FFS | Core Network Packet Delay Budget is specified in TS 23.501 [9]. This IE may be present in case of GBR QoS flows and is ignored otherwise. |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifGBRflow | This IE shall be present if the *GBR QoS Flow Information* IE is present in the *QoS Flow Level QoS Parameters* IE. |

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9.3.1.x Redundant QoS Flow Information

This IE provides the Redundant QoS Flow Information for a QoS flow.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Redundant QoS Flow Information | M |  | ENUMERATED (true, false) | This IE indicates that this QoS flow is requested for the redundant transmission, as specified in TS 23.501 [20]. |

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#### 9.3.1.x1 TSC Traffic Characteristics

This IE provides the traffic characteristics of TSC QoS flows.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| TSC Assistance Information Downlink | O |  | TSC Assistance Information  9.3.1.y1 |  |
| TSC Assistance Information Uplink | O |  | TSC Assistance Information  9.3.1.y1 |  |

#### 9.3.1.y1 TSC Assistance Information

This IE provides the TSC assistance information for a TSC QoS flow in the uplink or downlink (see TS 23.501 [20]).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Periodicity | M |  | 9.3.1.z1 |  |
| Burst Arrival Time | O |  | 9.3.1.z2 |  |

#### 9.3.1.z1 Periodicity

This IE indicates the Periodicity of the TSC QoS flow as defined in TS 23.501 [20].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Periodicity | M |  | INTEGER (0..640000, …) | Periodicity expressed in units of 1 us. |

#### 9.3.1.z2 Burst Arrival Time

This IE indicates the Burst Arrival Time of the TSC QoS flow as defined in TS 23.501 [9].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Burst Arrival Time | M |  | OCTET STRING | Encoded in the same format as the *ReferenceTime* IE as defined in TS 38.331 [10]. The value is truncated to 1 us granularity. |

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#### 9.3.3.2 PDU Session Resource To Setup List

This IE contains PDU session resource related information used at Bearer Context Setup Request

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Setup Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >PDU Session Type | M |  | 9.3.1.22 |  | - | - |
| >S-NSSAI | M |  | 9.3.1.9 |  | - | - |
| >Security Indication | M |  | 9.3.1.23 |  | - | - |
| >PDU Session Resource DL Aggregate Maximum Bit Rate | O |  | Bit Rate  9.3.1.20 | This IE shall be present when at least one Non-GBR QoS Flows is being setup. | - | - |
| >NG UL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Request | O |  | Data Forwarding Information Request  9.3.2.5 |  | - | - |
| >PDU Session Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to PDU Session. | - | - |
| >Existing Allocated NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >Network Instance | O |  | 9.3.1.62 | Shall be ignored if the *Common Network Instance* IE is included. | YES | ignore |
| >Common Network Instance | O |  | 9.3.1.66 |  | YES | ignore |
| **>DRB To Setup List** |  | *1* |  |  | - | - |
| **>>DRB To Setup Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | M |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >>>Cell Group Information | M |  | 9.3.1.11 | The gNB-CU-UP shall provide one UL UP Transport Layer Information Item per cell group entry. | - | - |
| >>>QoS Flows Information To Be Setup | M |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - | - |
| >>>DRB Data forwarding information Request | O |  | Data Forwarding Information Request  9.3.2.5 | Requesting forwarding info from the target gNB-CU-UP. | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Contains the PDCP SN Status at setup after Resume. | - | - |
| >>>DRB QoS | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB. | YES | ignore |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance  9.3.1.66 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

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#### 9.3.3.5 PDU Session Resource Setup List

This IE contains setup PDU session resource related information used at Bearer Context Setup Response

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Setup Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >Security Result | O |  | 9.3.1.52 |  | - | - |
| >NG DL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Response | O |  | Data Forwarding Information  9.3.2.6 | Providing forwarding info from the target gNB-CU-UP. | - | - |
| >NG DL UP Unchanged | O |  | ENUMERATED (True, …) |  | - | - |
| **>DRB Setup List** |  | *1* |  |  | - | - |
| **>>DRB Setup Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>DRB Data forwarding information Response | O |  | Data Forwarding Information  9.3.2.6 | Providing forwarding info from the target gNB-CU-UP. | - | - |
| >>>UL UP Parameters | M |  | UP Parameters 9.3.1.13 |  | - | - |
| >>>Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - | - |
| **>DRB Failed List** |  | *0.. 1* |  |  | - | - |
| **>>DRB Failed Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>Cause | M |  | 9.3.1.2 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

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#### 9.3.3.10 PDU Session Resource To Setup Modification List

This IE contains PDU session resource to setup related information used at Bearer Context Modification Request

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Setup Modification Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >PDU Session Type | M |  | 9.3.1.22 |  | - | - |
| >S-NSSAI | M |  | 9.3.1.9 |  | - | - |
| >Security Indication | M |  | 9.3.1.23 |  | - | - |
| >PDU Session Resource DL Aggregate Maximum Bit Rate | O |  | Bit Rate 9.3.1.20 | This IE shall be present when Non-GBR QoS Flows are setting up. | - | - |
| >NG UL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Request | O |  | Data Forwarding Information Request  9.3.2.5 | Requesting forwarding info from the target gNB-CU-UP. | - | - |
| >PDU Session Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to PDU Session. | - | - |
| >Network Instance | O |  | 9.3.1.62 |  | - | - |
| >Common Network Instance | O |  | 9.3.1.66 |  | YES | ignore |
| **>DRB To Setup List** |  | *1* |  |  | - | - |
| **>>DRB To Setup Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | M |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >>>Cell Group Information | M |  | 9.3.1.11 |  | - | - |
| >>>QoS Flows Information To Be Setup | M |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - | - |
| >>>DRB Data forwarding information Request | O |  | Data Forwarding Information Request  9.3.2.5 | Requesting forwarding info from the target gNB-CU-UP. | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides the PDCP SN Status at setup after Resume to the target gNB-CU-UP. | - | - |
| >>>DRB QoS | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB | YES | ignore |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance  9.3.1.66 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

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#### 9.3.3.11 PDU Session Resource To Modify List

This IE contains PDU session resource to modify related information used at Bearer Context Modification Request

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource To Modify Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >Security Indication | O |  | 9.3.1.23 | This IE is not used in this release. | - | - |
| >PDU Session Resource DL Aggregate Maximum Bit Rate | O |  | Bit Rate 9.3.1.20 |  | - | - |
| >NG UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Request | O |  | Data Forwarding Information Request  9.3.2.5 | Requesting forwarding information from the target gNB-CU-UP. | - | - |
| >PDU Session Data Forwarding Information | O |  | Data Forwarding Information  9.3.2.6 | Providing forwarding information to the source gNB-CU-UP. | - | - |
| >PDU Session Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to PDU Session. | - | - |
| >Network Instance | O |  | 9.3.1.62 | Shall be ignored if the *Common Network Instance* IE is included. | YES | ignore |
| >Common Network Instance | O |  | 9.3.1.66 |  | YES | ignore |
| **>DRB To Setup List** |  | *0..1* |  |  | - | - |
| **>>DRB To Setup Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | M |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration | M |  | 9.3.1.38 |  | - | - |
| >>>Cell Group Information | M |  | 9.3.1.11 |  | - | - |
| >>>QoS Flow Information To Be Setup | M |  | QoS Flow QoS Parameters List  9.3.1.25 |  | - | - |
| >>>DRB Data Forwarding Information Request | O |  | Data Forwarding Information Request  9.3.2.5 | Requesting forwarding information from the target gNB-CU-UP. | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides the PDCP SN Status at setup after Resume to the target gNB-CU-UP. | - | - |
| >>>DRB QoS | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB | YES | ignore |
| **>DRB To Modify List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Modify Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>SDAP Configuration | O |  | 9.3.1.39 |  | - | - |
| >>>PDCP Configuration | O |  | 9.3.1.38 |  | - | - |
| >>>DRB Data forwarding information | O |  | Data Forwarding Information  9.3.2.6 | Providing forwarding information to the source gNB-CU-UP. | - | - |
| >>>PDCP SN Status Request | O |  | ENUMERATED (requested, …) | The gNB-CU-CP requests the gNB-CU-UP to provide the PDCP SN Status in the response message. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides the PDCP SN Status to the target gNB-CU-UP. | - | - |
| >>>DL UP Parameters | O |  | UP Parameters  9.3.1.13 |  | - | - |
| >>>Cell Group To Add | O |  | Cell Group Information  9.3.1.11 |  | - | - |
| >>>Cell Group To Modify | O |  | Cell Group Information  9.3.1.11 |  | - | - |
| >>>Cell Group To Remove | O |  | Cell Group Information  9.3.1.11 |  | - | - |
| >>>Flow Mapping Information | O |  | QoS Flow QoS Parameters List  9.3.1.25 | Overrides previous mapping information. | - | - |
| >>>DRB Inactivity Timer | O |  | Inactivity Timer  9.3.1.54 | Included if the Activity Notification Level is set to DRB. | - | - |
| >>>Old QoS Flow List - UL End Marker expected | O |  | QoS Flow List 9.3.1.12 | This IE is included to be used for indicating that the source NG-RAN node has initiated QoS flow re-mapping and has not yet received SDAP end markers, as described in TS 38.300 [8].  It shall only contain UL QoS flow information for QoS flows for which no SDAP end marker has been yet received on the source side. | YES | reject |
| >>>DRB QoS | O |  | 9.3.1.26 | Indicates the DRB QoS when more than one QoS Flow is mapped to the DRB | YES | ignore |
| **>DRB To Remove List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Remove Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >S-NSSAI | O |  | 9.3.1.9 |  | YES | reject |
| >Redundant NG UL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |
| >Redundant Common Network Instance | O |  | Common Network Instance  9.3.1.66 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

*Next of Text Proposal for TS 38.463*

#### 9.3.3.17 PDU Session Resource Setup Modification List

This IE contains setup PDU session resource related information used at Bearer Context Modification Response

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Setup Modification Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >Security Result | O |  | 9.3.1.52 |  | - | - |
| >NG DL UP Transport Layer Information | M |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| >PDU Session Data Forwarding Information Response | O |  | Data Forwarding Information  9.3.2.6 | Provides forwarding information from the target gNB-CU-UP. | - | - |
| **>DRB Setup List** |  | *1* |  |  | - | - |
| **>>DRB Setup Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>DRB Data forwarding information Response | O |  | Data Forwarding Information  9.3.2.6 | Provides forwarding information from the target gNB-CU-UP. | - | - |
| >>>UL UP Parameters | M |  | UP Parameters  9.3.1.13 |  | - | - |
| >>>Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - | - |
| **>DRB Failed List** |  | *0.. 1* |  |  | - | - |
| **>>DRB Failed Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>Cause | M |  | 9.3.1.2 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |

*Next of Text Proposal for TS 38.463*

#### 9.3.3.19 PDU Session Resource Modified List

This IE contains modified PDU session resource related information used at Bearer Context Modification Response

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Modified Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >NG DL UP Transport Layer Information | O |  | UP Transport Layer Information 9.3.2.1 |  | - | - |
| >Security Result | O |  | 9.3.1.52 |  | - | - |
| >PDU Session Data Forwarding Information Response | O |  | Data Forwarding Information  9.3.2.6 |  | - | - |
| **>DRB Setup List** |  | *0.. 1* |  |  | - | - |
| **>>DRB Setup Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>DRB Data forwarding information Response | O |  | Data Forwarding Information  9.3.2.6 |  | - | - |
| >>>UL UP Parameters | M |  | UP Parameters  9.3.1.13 |  | - | - |
| >>>Flow Setup List | M |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - | - |
| **>DRB Failed List** |  | *0.. 1* |  |  | - | - |
| **>>DRB Failed Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>Cause | M |  | 9.3.1.2 |  | - | - |
| **>DRB Modified List** |  | *0.. 1* |  |  | - | - |
| **>>DRB Modified Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>UL UP Parameters | O |  | UP Parameters  9.3.1.13 | Carries the UL UP parameters. | - | - |
| >>>PDCP SN Status Information | O |  | 9.3.1.58 | Provides PDCP SN Status to the target gNB-CU-UP. | - | - |
| >>>Flow Setup List | O |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>Flow Failed List | O |  | Flow Failed List  9.3.1.45 |  | - | - |
| **>DRB Failed To Modify List** |  | *0.. 1* |  |  | - | - |
| **>>DRB Failed To Modify Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>Cause | M |  | 9.3.1.2 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

*Next of Text Proposal for TS 38.463*

#### 9.3.3.23 PDU Session Resource Required To Modify List

This IE contains PDU session resource to modify related information used at Bearer Context Modification Required

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| **PDU Session Resource Required To Modify Item** |  | *1..<maxnoofPDUSessionResource>* |  |  | - | - |
| >PDU Session ID | M |  | 9.3.1.21 |  | - | - |
| >NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | - | - |
| **>>DRB To Modify Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>gNB-CU-UP Cell Group Related Configuration | O |  | 9.3.1.34 |  | - | - |
| >>>Flow To Remove | O |  | QoS Flow List  9.3.1.12 |  | - | - |
| >>>Cause | O |  | 9.3.1.2 |  | - | - |
| **>DRB To Remove List** |  | *0.. 1* |  |  | - | - |
| **>>DRB To Remove Item** |  | *1..<maxnoofDRBs>* |  |  | - | - |
| >>>DRB ID | M |  | 9.3.1.16 |  | - | - |
| >>>Cause | M |  | 9.3.1.2 |  | - | - |
| >Redundant NG DL UP Transport Layer Information | O |  | UP Transport Layer Information  9.3.2.1 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs for a UE. Value is 32. |
| maxnoofPDUSessionResource | Maximum no. of PDU Sessions for a UE. Value is 256. |

*End of Text Proposal for TS 38.463*