**3GPP TSG-RAN WG3 Meeting #110-e *R3-206982***

**E-meeting, 2 – 12 Nov 2020**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.423** | **CR** | **0494** | **rev** | **-** | **Current version:** | **16.3.0** |  |
|  |
| *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 of alternative QoS profile |
|  |  |
| ***Source to WG:*** | Huawei, Orange, Vodafone |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | 5G\_V2X\_NRSL |  | ***Date:*** | 2020-11-02 |
|  |  |  |  |  |
| ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | In RAN3 #108e meeting, the TP R3-204193 was agreed to support Alternative QoS Profile over Xn during HO and Notification control procedure. However, no changes were introduced to the S-NG-RAN node addition procedure and S-NG-RAN node modification procedure.For MN initiated SN addition/modification procedure, according to current specification, if a GBR QoS flow with alternative QoS profile is mapped to a SN terminated bearer, the S-NG-RAN can only rely on the basic QoS profile to determine to accept or reject the QoS flow. If a GBR QoS flow with alternative QoS profile is mapped to a MN terminated bearer, the S-NG-RAN can only rely on the DRB QoS to accept or reject the DRB. In other words, the AQP feature is not supported in S-NG-RAN addition or modification procedure. In addition, with respect to the Notification Control Indication procedure, in the procedure texts, S-NG-RAN node is only allowed to indicate current QoS parameter set index for SN terminated bearer, i.e., it is not supported for MN terminated bearer. But the MN also needs to know this for MN terminated bearers in order to inform CN. |
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| ***Summary of change:*** | 1. Enable the S-NG-RAN node to feedback the current QoS profile index during the S-NG-RAN node addition procedure and M-NG-RAN node initiated SN-NG-RAN node modification procedures.
2. Update the procedure text of Notification Control Indication procedure to enable S-NG-RAN node to provide QoS parameter set index for MN terminated bearer.

Impact Analysis:Impact assessment towards the previous version of the specification (same release):This CR has isolated impact with the previous version of the specification (same release).This CR only introduces the support of alternative QoS profile during the S-NG-RAN node addition procedure and S-NG-RAN node modification procedure. |
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| ***Consequences if not approved:*** | The AQP feature is not supported during SN addition procedure and SN modification procedure. |
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| ***Clauses affected:*** | 8.3.1.2, 8.3.3.2, 8.3.10.3, 9.2.1.6, 9.2.1.8, 9.2.1.10, 9.2.1.12, 9.3.5, 9.3.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS38.473 CRXXX  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

<CHANGES START>

8.3.1.2 Successful Operation

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**Figure 8.3.1.2-1: S-NG-RAN node Addition Preparation, successful operation**

The M-NG-RAN node initiates the procedure by sending the S-NODE ADDITION REQUEST message to the S-NG-RAN node.

When the M-NG-RAN node sends the S-NODE ADDITION REQUEST message, it shall start the timer TXnDCprep.

The allocation of resources according to the values of the *Allocation and Retention Priority* IE included in the *QoS Flow Level QoS Parameters* IE for each QoS flow shall follow the principles specified for the PDU Session Resource Setup procedure in TS 38.413 [5].

The S-NG-RAN node shall choose the ciphering algorithm based on the information in the *UE Security Capabilities* IE and locally configured priority list of AS encryption algorithms and apply the key indicated in the *S-NG-RAN node Security Key* IE as specified in TS 33.501 [28].

If the *TSC Traffic Characteristics* IE is included for a QoS flow in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

If the *Additional QoS* *Flow Information* IE is included for a QoS flow in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE and the *Common Network Instance* IE is not present, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each GBR QoS flow, if the *Offered GBR QoS Flow Information* IE is included in the *QoS Flows To Be Setup List* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node may request the M-NG-RAN node to configure the DRB to which that QoS flow is mapped with MCG resources.

For each PDU session, if the *Non-GBR Resources Offered* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE and set to “true”, the S-NG-RAN node may request the M-NG-RAN node to configure DRBs to which non-GBR QoS flows of the PDU session are mapped with MCG resources.

For each PDU session, if the *Common* *Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

Redundant transmission:

- For each PDU session, if the *Redundant UL NG-U UP TNL Information at UPF* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node shall, if supported, use it as the uplink termination point for the user plane data for this PDU session for the redundant transmission and it shall include the *Redundant DL NG-U UP TNL Information at NG-RAN* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE as described in TS 23.501 [9].

- For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE the S-NG-RAN node shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [7].

- For each PDU session for which the *Redundant QoS Flow Indicator* IE is include in *QoS Flows To Be Setup List* IE contained in the *S-NODE ADDITION REQUEST* message, the S-NG-RAN node shall, if supported, store and use it as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant PDU Session Information* IE is included in the *PDU Session Resource Setup Info - SN terminated* IE in the S-NODE ADDITION REQUEST message, the S-NODE-RAN node shall, if supported, store the received information in the UE context and setup the redundant user plane resources for the concerned PDU session, as specified in TS 23.501 [7].

- For each PDU session resource successfully setup for which the *Redundant PDU Session Information* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, include the *Used RSN Information* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

For each GBR QoS flow in the S-NODE ADDITION REQUEST message, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resource Setup Info – SN terminated* IE of the *PDU Session Resources To Be Added List* IE, the S-NG-RAN node may accept the setup of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled. In case the S-NG-RAN node accepts the setup fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set.

For each GBR QoS flow in the S-NODE ADDITION REQUEST message, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resource Setup Info – MN terminated* IE of the *PDU Session Resources To Be Added List* IE, the S-NG-RAN node may accept the setup of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled. In case the S-NG-RAN node accepts the setup fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resource Setup Response Info – MN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set.

If the S-NODE ADDITION REQUEST message contains the *Selected PLMN* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE ADDITION REQUEST message contains the *Expected UE Behaviour* IE, the S-NG-RAN node shall, if supported, store this information and may use it to optimize resource allocation.

If the S-NODE ADDITION REQUEST message contains the *Mobility Restriction List* IE, the S-NG-RAN node, if supported, shall store this information and use it to select an appropriate SCG.

If the S-NODE ADDITION REQUEST message contains the *Index to RAT/Frequency Selection Priority* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NG-RAN node is a gNB and the S-NODE ADDITION REQUEST message contains the *PCell ID* IE, the S-NG-RAN node shall search for the target NR cell among the NR neighbour cells of the PCell indicated, as specified in the TS 37.340 [8].

If the S-NODE ADDITION REQUEST message contains the *S-NG-RAN node PDU Session Aggregate Maximum Bit Rate* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE ADDITION REQUEST message contains the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node should forward it to lower layers and it may use it for the purpose of resource coordination with the M-NG-RAN node. The S-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The S-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the S-NG-RAN node and the M-NG-RAN node.

If the S-NODE ADDITION REQUEST message contains the *NE-DC TDM Pattern* IE, the S-NG-RAN node should forward it to lower layers and use it for the purpose of single uplink transmission. The S-NG-RAN node shall consider the value of the received *NE-DC TDM Pattern* IE valid until reception of a new update of the IE for the same UE.

If the S-NODE ADDITION REQUEST message contains the *QoS Flow Mapping Indication* IE, the S-NG-RAN node may take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

For each bearer for which allocation of the PDCP entity is requested at the S-NG-RAN node:

- the M-NG-RAN node may propose to apply forwarding of downlink data by including the *DL Forwarding* IE within *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message. For each bearer that it has decided to admit, the S-NG-RAN node may include the *DL Forwarding GTP Tunnel Endpoint* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this bearer.

- the S-NG-RAN node may include for each bearer in the *PDU Session Resource Setup Response Info – SN terminated* IE the *UL Forwarding GTP Tunnel Endpoint* IE to indicates it request data forwarding of uplink packets to be performed for that bearer.

- the M-NG-RAN node shall include *RLC Mode* IE for each bearer offloaded from M-NG-RAN node to S-NG-RAN node in the *DRBs to QoS Flow Mapping List* IE within the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDTION REQUEST message, and the *RLC Mode* IE indicates the mode that the M-NG-RAN used for the DRB when it was hosted at the M-NG-RAN node.

For each bearer for which the PDCP entity is at the M-NG-RAN node:

- the M-NG-RAN node shall include the *RLC mode* IE for each bearer in the *DRBs To Be Setup List* IE within the *PDU Session Resource Setup Info – MN terminated* IE of the S-NODE ADDTION REQUEST message to indicate the RLC mode has been configured at the M-NG-RAN node, so that the S-NG-RAN node shall configure the same RLC mode for this MN terminated split bearer.

The M-NG-RAN node may also propose to apply forwarding of UL data when offloading QoS flows for which in-order delivery is requested by including the *UL Forwarding* *Proposal* IE in the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message. The S-NG-RAN node may include the *PDU Session Level UL Data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding.

If the *Masked IMEISV* IE is contained in the S-NODE ADDITION REQUEST message the S-NG-RAN node shall, if supported, use it to determine the characteristics of the UE for subsequent handling.

If the *UE Radio Capability ID* IE is contained in the S-NODE ADDITION REQUES message, the S-NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 23.501 [7] and TS 23.502 [13].

The S-NG-RAN node shall report to the M-NG-RAN node, in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the result for all the requested PDU session resources in the following way:

- A list of PDU session resources which are successfully established shall be included in the *PDU Session Resources Admitted To Be Added List* IE.

- A list of PDU session resources which failed to be established shall be included in the *PDU Session Resources Not Admitted List* IE.

Upon reception of the S-NODE ADDITION REQUEST ACKNOWLEDGE message the M-NG-RAN node shall stop the timer TXnDCprep.

If the S-NODE ADDITION REQUEST ACKNOWLEDGE message contains the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node may use it for the purpose of resource coordination with the S-NG-RAN node. The M-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The M-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the M-NG-RAN node and the S-NG-RAN node.

The S-NG-RAN node may include for each bearer in the *DRBs To Be Setup List* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message the *PDCP SN Length* IE to indicate the PDCP SN length for that DRB.

If the *S-NG-RAN node UE XnAP ID* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as defined in TS 37.340 [8].

If the S-NODE ADDITION REQUEST message contains the *PDCP SN Length* IE, the S-NG-RAN node shall, if supported, store this information and use it for lower layer configuration of the concerned MN terminated bearer.

If the S-NODE ADDITION REQUEST message contains the *SN Addition Trigger Indication* IE, the S-NG-RAN node shall include the *RRC config indication* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message to inform the M-NG-RAN node if the S-NG-RAN node applied full or delta configuration, as specified in TS 37.340 [8].

If the S-NODE ADDITION REQUEST message contains the *S-NG-RAN node Maximum Integrity Protected Data Rate* *Uplink* IE or the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE, the S-NG-RAN node shall use the received information when enforcing the maximum integrity protected data rate for the UE.

If the *Security Indication* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message, the behaviour of the S-NG-RAN node shall be the same as specified for the same IE in the *PDU Session Resources To Be Setup List* IE in the Handover Preparation procedure, for the concerned PDU session, and the S-NG-RAN node shall include the *Security Result* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE.

If the *Security Result* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message, the S-NG-RAN node may take the information into account when deciding whether to perform user plane integrity protection or ciphering for the DRBs that it establishes for the concerned PDU session, except if the *Split Session Indicator* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and set to "split", in which case it shall perform user plane integrity protection or ciphering according to the information in the *Security Result* IE*.* If the S-NG-RAN node is an ng-eNB, it shall reject all PDU sessions for which the *Integrity Protection Indication* IE is set to "required" as specified in TS 33.501 [28]. If either the S-NG-RAN node or the M-NG-RAN node is an ng-eNB, the S-NG-RAN node shall behave according to clause 6.10.4 of TS 33.501 [28] for PDU sessions for which the *Integrity Protection Indication* IE is set to "preferred".

The S-NG-RAN node may include the *Location Information at S-NODE* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, if respective information is available at the S-NG-RAN node.

If the *Location Information at S-NODE Reporting* IE set to "pscell" is included in the S-NODE ADDITION REQUEST, the S-NG-RAN node shall, start providing information about the current location of the UE. If the *Location Information at S-NODE* IE is included in the S-NODE ADDITION REQUEST ACKNOWLEDGE, the M-NG-RAN node shall store the included information so that it may be transferred towards the AMF.

If the *Default DRB Allowed* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message and set to “true”, the S-NG-RAN node may configure the default DRB for the PDU session.

If the S-NODE ADDITION REQUEST ACKNOWLEDGE message includes the *DRB IDs taken into use* IE, the M-NG-RAN node, if applicable, shall act as specified in TS 37.340 [8].

If *Trace Activation* IE has previously been received for this UE, it shall be included in the S-NODE ADDITION REQUEST message. If the *Trace Activation* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, initiate the requested trace function as described in TS 32.422 [23].

The M-NG-RAN node may request the S-NG-RAN node to configure the SRB3 by including the *Requested Fast MCG recovery via SRB3* IE in the S-NODE ADDITION REQUEST message. The S-NG-RAN node may include the *Available fast MCG recovery via SRB3* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message to indicate that the SRB3 is enabled.

If the *QoS Monitoring Request* IE is included in the *QoS Flow Level QoS Parameters* IE for a QoS flow contained in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring as specified in TS 23.501 [7].

For each QoS flow which has been successfully established in the S-NG-RAN node, if the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node shall store this information, and, if supported, perform delay measurement and QoS monitoring as specified in TS 23.501 [7]. In case such a QoS flow is included in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring.

**Interactions with the S-NG-RAN node Reconfiguration Completion procedure:**

If the S-NG-RAN node admits at least one PDU session resource, the S-NG-RAN node shall start the timer TXnDCoverall when sending the S-NODE ADDITION REQUEST ACKNOWLEDGE message to the M-NG-RAN node. The reception of the S-NODE RECONFIGURATION COMPLETE message shall stop the timer TXnDCoverall.

**Interaction with the Activity Notification procedure**

Upon receiving an S-NODE ADDITION REQUEST message containing the *Desired Activity Notification Level* IE, the S-NG-RAN node shall, if supported, use this information to decide whether to trigger subsequent Activation Notification procedures according to the requested notification level.

<NEXT CHANGES>

8.3.3.2 Successful Operation

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**Figure 8.3.3.2-1: M-NG-RAN node initiated S-NG-RAN node Modification Preparation, successful operation**

The M-NG-RAN node initiates the procedure by sending the S-NODE MODIFICATION REQUEST message to the S-NG-RAN node.

When the M-NG-RAN node sends the S-NODE MODIFICATION REQUEST message, it shall start the timer TXnDCprep.

The S-NODE MODIFICATION REQUEST message may contain

- within the *UE Context Information* IE;

- PDU session resources to be added within the *PDU Session Resources To Be Added Item* IE;

- PDU session resources to be modified within the *PDU Session Resources To Be Modified Item* IE;

- PDU session resources to be released within the *PDU Session Resources To Be Released Item* IE;

- the *S-NG-RAN node Security Key* IE;

- the *S-NG-RAN node UE Aggregate Maximum Bit Rate* IE;

- the *M-NG-RAN node to S-NG-RAN node Container* IE;

- the *PDCP Change Indication* IE;

- the *SCG Configuration Query* IE;

- the *Requested split SRBs IE*;

- the *Requested split SRBs release* IE;

- the *Requested fast MCG recovery via SRB3 IE*;

- the *Requested fast MCG recovery via SRB3 Release* IE;

- the *Additional DRB IDs* IE;

- the *MR-DC Resource Coordination Information* IE.

If the S-NODE MODIFICATION REQUEST message contains the *Selected PLMN* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE MODIFICATION REQUEST message contains the *Mobility Restriction List* IE, the S-NG-RAN node shall

- replace the previously provided Mobility Restriction List by the received Mobility Restriction List in the UE context;

- use this information to select an appropriate SCG.

If the *S-NG-RAN node UE Aggregate Maximum Bit Rate* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall:

- replace the previously provided S-NG-RAN node UE Aggregate Maximum Bit Rate by the received S-NG-RAN node UE Aggregate Maximum Bit Rate in the UE context;

- use the received S-NG-RAN node UE Aggregate Maximum Bit Rate for Non-GBR Bearers for the concerned UE as defined in TS 37.340 [8].

If the S-NODE MODIFICATION REQUEST message contains the *Index to RAT/Frequency Selection Priority* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE MODIFICATION REQUEST message contains the *S-NG-RAN node PDU Session Aggregate Maximum Bit Rate* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE MODIFICATION REQUEST message contains the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node should forward it to lower layers and it may use it for the purpose of resource coordination with the M-NG-RAN node. The S-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The S-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the S-NG-RAN node and the M-NG-RAN node.

If the S-NODE MODIFICATION REQUEST message contains the *NE-DC TDM Pattern* IE, the S-NG-RAN node should forward it to lower layers and use it for the purpose of single uplink transmission. The S-NG-RAN node shall consider the value of the received *NE-DC TDM Pattern* IE valid until reception of a new update of the IE for the same UE.

The allocation of resources according to the values of the *Allocation and Retention Priority* IE included in the *QoS Flow Level QoS Parameters* IE for each QoS flow shall follow the principles specified for the PDU Session Resource Setup procedure in TS 38.413 [5].

If the *Additional QoS* *Flow Information* IE is included for a QoS flow in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

If the *TSC Traffic Characteristics* IE is included for a QoS flow in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and in the *PDU Session Resource Modification Info – SN terminated* IE and the *Common Network Instance* IE is not present, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each PDU session, if the *Common* *Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and in the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each GBR QoS flow, if the *Offered GBR QoS Flow Information* IE is included in the *QoS Flows To Be Setup List* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node may request the M-NG-RAN node to configure the DRB to which that QoS flow is mapped with MCG resources.

For each PDU session, if the *Non-GBR Resources Offered* IE is included in the *PDU Session Resource Modification Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE and set to “true”, the S-NG-RAN node may request the M-NG-RAN node to configure the DRBs to which non-GBR QoS flows of the PDU session are mapped with MCG resources.

For each GBR QoS flow in the S-NODE MODIFICATION REQUEST message, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resource Setup Info – SN terminated* IE of the *PDU Session Resources To Be Added List* IE, the S-NG-RAN node may accept the setup of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled. In case the S-NG-RAN node accepts the setup fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set.

For each GBR QoS flow in the S-NODE MODIFICATION REQUEST message, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resource Modification Info – SN terminated* IE of the *PDU Session Resources To Be Modified List* IE, the S-NG-RAN node may accept the setup or modification of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled. In case the S-NG-RAN node accepts the setup or modification fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resource Modification Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set.

For each GBR QoS flow in the S-NODE MODIFICATION REQUEST message, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resource Setup Info – MN terminated* IE of the *PDU Session Resources To Be Added List* IE, the S-NG-RAN node may accept the setup of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled. In case the S-NG-RAN node accepts the setup fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resource Setup Response Info – MN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set.

For each GBR QoS flow in the S-NODE MODIFICATION REQUEST message, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resource Modification Info – MN terminated* IE of the *PDU Session Resources To Be Modified List* IE, the S-NG-RAN node may accept the setup or modification of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled. In case the S-NG-RAN node accepts the setup or modification fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resource Modification Response Info – MN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set.

If at least one of the requested modifications is admitted by the S-NG-RAN node, the S-NG-RAN node shall modify the related part of the UE context accordingly and send the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message back to the M-NG-RAN node.

The M-NG-RAN node shall include *RLC Mode* IE for each bearer offloaded from M-NG-RAN node to S-NG-RAN node in the *DRBs to QoS Flow Mapping List* IE within the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, and the *RLC Mode* IE indicates the mode that the M-NG-RAN used for the DRB when it was hosted at the M-NG-RAN node.

The S-NG-RAN node shall include the PDU sessions for which resources have been either added or modified or released at the S-NG-RAN node either in the *PDU Session Resources Admitted To Be Added List* IE or the *PDU Session Resources Admitted To Be Modified List* IE or the *PDU Session Resources Admitted To Be Released List* IE. The S-NG-RAN node shall include the PDU sessions that have not been admitted in the *PDU Session Resources Not Admitted List* IE with an appropriate cause value.

If the M-NG-RAN node requests transfer of the PDCP hosting from the S-NG-RAN node to the M-NG-RAN node for a PDU session, in which case the S-NODE MODIFICATION REQUEST message contains an PDU session resource to be released which is configured with the SCG bearer option within the *PDU Session Resources To Be Released List* IE, the S-NG-RAN node shall include the *RLC Mode* IE within the *DRBs To Be Released List* IE in the *PDU Session Resources admitted to be released List – SN terminated* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message. The the *RLC Mode* IE indicates the RLC mode that the S-NG-RAN node uses for the DRB.

If the *QoS Flow Mapping Indication* IE is included in the S-NODE MODIFICATION REQUEST message for a QoS flow to be modified, the S-NG-RAN node may replace and take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

If the S-NODE MODIFICATION REQUEST message contains for a PDU session resource to be modified which is configured with the SN terminated bearer option, the *UL NG-U UP TNL Information at UPF* IE the S-NG-RAN node shall use it as the new UL NG-U address.

If the S-NODE MODIFICATION REQUEST message contains for a PDU session resource to be modified which is configured with the MN terminated bearer option, the *MN UL PDCP UP TNL Information* IE the S-NG-RAN node shall use it as the new UL Xn-U address.

Redundant transmission:

- If the S-NODE MODIFICATION REQUEST message contains for a PDU session resource to be modified which is configured with the SN terminated bearer option, the *Redundant UL NG-U UP TNL Information at UPF* IE, the S-NG-RAN node shall, if supported, use it as the new UL NG-U address for the redundant transmission as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE or in the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant QoS Flow Indicator* IE is set to false for all QoS flows, the S-NG-RAN node shall, if supported, stop the redundant transmission and release the redundant tunnel for the concerned PDU Session as specified in TS 23.501 [7].

- For each PDU session for which the *Redundant QoS Flow Indicator* IE is included in the *S-NODE MODIFICATION REQUEST* message, the S-NG-RAN node shall, if supported, store and use it as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant PDU Session Information* IE is included in the *PDU Session Resource Setup Info - SN terminated* IE in the S-NODE MODIFICATION REQUEST message, the S-NODE-RAN node shall, if supported, store the received information in the UE context and setup the redundant user plane for the concerned PDU session, as specified in TS 23.501 [7].

- For each PDU session resource successfully setup for which the *Redundant PDU Session Information* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, include the *Used RSN Information* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the S-NODE MODIFICATION REQUEST message contains the *QoS flows To Be Released List* within the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node may propose to apply forwarding of UL data for the QoS flows for which in-order delivery is requested by including the *UL Forwarding* *Proposal* IE in the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Modification Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

For a PDU session resource to be modified which is configured with the SN terminated bearer option the S-NG-RAN node may include in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *DL NG-U UP TNL Information at NG-RAN* IE.

For a PDU session resource to be modified which is configured with the MN terminated bearer option the S-NG-RAN node may include in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *SN DL SCG UP TNL Information* IE.

If the *PDCP Change Indication* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

Upon reception of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the M-NG-RAN node shall stop the timer TXnDCprep. If the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message has included the *S-NG-RAN node to M-NG-RAN node Container* IE, the M-NG-RAN node is then defined to have a Prepared S-NG-RAN node Modification for that Xn UE-associated signalling.

If the *SCG Configuration Query* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall provide corresponding radio configuration information within the *S-NG-RAN node to M-NG-RAN node Container* IE and may provide the corresponding data forwarding related information within the *PDU Session Resources with Data Forwarding List* IE as specified in TS 37.340 [8].

For each bearer for which allocation of the PDCP entity is requested at the S-NG-RAN node:

- if applicable, the M-NG-RAN node may propose to apply forwarding of downlink data by including the DL Forwarding IE within the PDU Session Resource Setup Info – SN terminated IE of the S-NODE MODIFICATION REQUEST message. For each bearer that it has decided to admit, the S-NG-RAN node may include the DL Forwarding GTP Tunnel Endpoint IE within the PDU Session Resource Setup Response Info – SN terminated IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this bearer.

- the S-NG-RAN node may include for each bearer in the PDU Session Resource Setup Response Info – SN terminated IE the UL Forwarding GTP Tunnel Endpoint IE to indicate it requests data forwarding of uplink packets to be performed for that bearer.

The M-NG-RAN node may propose to apply forwarding of UL data when offloading QoS flows for which in-order delivery is requested by including the *UL Forwarding Proposal* IE in the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Setup Info – SN terminated* IE or *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message. The S-NG-RAN node may include the *PDU Session Level UL Data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or *PDU Session Resource Modification Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding.

If the S-NODE MODIFICATION REQUEST message contains the *Requested Split SRBs* IE, the S-NG-RAN node may use it to add split SRBs. If the S-NODE MODIFICATION REQUEST message contains the *Requested Split SRBs* *release* IE, the S-NG-RAN node may use it to release split SRBs.

The M-NG-RAN node may request the S-NG-RAN node to configure the SRB3 by including the *Requested Fast MCG recovery via SRB3* IE in the S-NODE MODIFICATION REQUEST message. The M-NG-RAN node may request the S-NG-RAN node to release the SRB3 by including the *Requested Fast MCG recovery via SRB3 Release* IE in the S-NODE MODIFICATION REQUEST message. The S-NG-RAN node may include the *Available fast MCG recovery via SRB3* or the *Release fast MCG recovery via SRB3* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that the SRB3 is enabled or released.

If the *Lower Layer presence status change* IE set to "release lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

If the *Lower Layer presence status change* IE set to "re-establish lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

If the *Lower Layer presence status change* IE set to "suspend lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

If the *Lower Layer presence status change* IE set to "resume lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

The M-NG-RAN node may include for each bearer in the *DRBs To Be Modified List* IE in the S-NODE MODIFICATION REQUEST message the *RLC Status* IE to indicate that RLC has been reestablished at the M-NG-RAN node and the S-NG-RAN node may trigger PDCP data recovery.

If the S-NODE MODIFICATION REQUEST message contains the *PDCP SN Length* IE in the *DRBs To Be Setup List* IE, the S-NG-RAN node shall, if supported, store this information and use it for lower layer configuration of the concerned MN terminated bearer.

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Info – MN terminated* IE is contained in the S-NODE MODIFICATION REQUEST message and set to "configured", the S-NG-RAN node shall, if supported, add the RLC entity of secondary path and the RLC entity of all additional path(s) for the indicated DRB. And if the S-NODE MODIFICATION REQUEST message contains the *Duplication Activation* IE, the S-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication.

If the S-NODE MODIFICATION REQUEST message contains the RLC Duplication Information IE, the S-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication for the indicated DRB with more than two RLC entities.

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Info – MN terminated* IE is contained in the S-NODE MODIFICATION REQUEST message and set to "de-configured", the S-NG-RAN node shall, if supported, delete the RLC entity of secondary path and the RLC entity of all additional path(s) for the indicated DRB.

The S-NG-RAN node may include for each bearer in the *DRBs To Be Setup List* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *PDCP SN Length* IE to indicate the PDCP SN length for that DRB.

The S-NG-RAN node may include the *QoS Flow Mapping Indication* IE for a QoS flow in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that only the uplink or downlink QoS flow is mapped to the DRB.

If the *Additional DRB* IDs IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall store this information and use it together with previously provided DRB IDs if any, for SN terminated bearers.

If the S-NODE MODIFICATION REQUEST message contains the *S-NG-RAN node Maximum Integrity Protected Data Rate Uplink* IE or the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE, the S-NG-RAN node shall use the received information when enforcing the maximum integrity protected data rate for the UE.

If the *Security Indication* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the behaviour of the S-NG-RAN node shall be the same as specified for the same IE in the *PDU Session Resources To Be Setup List* IE in the Handover Preparation procedure, for the concerned PDU session, and the S-NG-RAN node shall include the *Security Result* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE.

If the *Security Result* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node may take the information into account when deciding whether to perform user plane integrity protection or ciphering for the DRBs that it establishes for the concerned PDU session, except if the *Split Session Indicator* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and set to "split", in which case it shall perform user plane integrity protection or ciphering according to the information in the *Security Result* IE*.* If the S-NG-RAN node is an ng-eNB, it shall reject all PDU sessions for which the *Integrity Protection Indication* IE is set to "required” as specified in TS 33.501 [28]. If either the S-NG-RAN node or the M-NG-RAN node is an ng-eNB, the S-NG-RAN node shall behave according to clause 6.10.4 of TS 33.501 [28] for PDU sessions for which the *Integrity Protection Indication* IE is set to "preferred".

The S-NG-RAN node may include the *Location Information at S-NODE* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, if respective information is available at the S-NG-RAN node.

If the *Location Information at S-NODE Reporting* IE set to "pscell" is included in the S-NODE MODIFICATION REQUEST, the S-NG-RAN node shall start providing information about the current location of the UE. If the *Location Information at S-NODE* IE is included in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE, the M-NG-RAN node shall store the included information so that it may be transferred towards the AMF.

If the *S-NSSAI* IE is included in the *PDU Session Resources To Be Modified List* IE in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall replace the previously *S-NSSAI* IE by the received *S-NSSAI I*E.

If the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message contains the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node may use it for the purpose of resource coordination with the S-NG-RAN node. The M-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The M-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the M-NG-RAN node and the S-NG-RAN node.

If the S-NODE MODIFICATION REQUEST message contains the *PCell ID* IE, the S-NG-RAN node may search for the target cell among the neighbour cells of the PCell indicated, as specified in the TS 37.340 [8].

If the S-NG-RAN node applied a full configuration or delta configuration, e.g., as part of mobility procedure involving a change of DU, the S-NG-RAN node shall inform the M-NG-RAN node by including the *RRC config indication* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *Default DRB Allowed* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE or *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message and set to "true", the S-NG-RAN node may configure the default DRB for the PDU session.

If the *Default DRB Allowed* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE or *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message and set to "false", the S-NG-RAN node shall not configure the default DRB for the PDU session and the S-NG-RAN shall reconfigure the default DRB into a normal DRB if it has configured the default DRB before.

If the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message includes the *DRB IDs taken into use* IE, the M-NG-RAN node, if applicable, shall act as specified in TS 37.340 [8].

If the *QoS Monitoring Request* IE is included in the *QoS Flow Level QoS Parameters* IE for a QoS flow contained in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring as specified in TS 23.501 [7].

For each QoS flow which has been successfully added or modified in the S-NG-RAN node, if the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall store this information, and, if supported, perform delay measurement and QoS monitoring as specified in TS 23.501 [7]. In case such a QoS flow is included in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or the *PDU Session Resource Modification Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring.

**Interactions with the S-NG-RAN node Reconfiguration Completion procedure:**

If the S-NG-RAN node admits a modification of the UE context requiring the M-NG-RAN node to report about the success of the RRC connection reconfiguration procedure, the S-NG-RAN node shall start the timer TXnDCoverall when sending the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to the M-NG-RAN node. The reception of the S-NG-RAN node RECONFIGURATION COMPLETE message shall stop the timer TXnDCoverall.

**Interaction with the Activity Notification procedure**

Upon receiving an S-NODE MODIFICATION REQUEST message containing the *Desired Activity Notification Level* IE, the S-NG-RAN node shall, if supported, use this information to decide whether to trigger subsequent Activity Notification procedures, or stop or modify ongoing triggering of these procedures due to a previous request.

**Interaction with the Xn-U Address Indication procedure**

For QoS flow mapped to DRBs configured with an SN terminated bearer option and removed from the SDAP in the S-NG-RAN node the S-NG-RAN node may provides data forwarding related information in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE within the *Data Forwarding and offloading Info from source NG-RAN node* IE, in which case the M-NG-RAN node may decide to provide data forwarding addresses to the S-NG-RAN node and trigger the Xn-U Address Indication procedure as specified in TS 37.340 [8].

For QoS flow offloading from the S-NG-RAN node to the M-NG-RAN, the S-NG-RAN node may provide the data forwarding related information in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE within the *Data Forwarding and offloading Info from source NG-RAN node* IE, in which case the M-NG-RAN node may decide to provide data forwarding addresses to the S-NG-RAN node and trigger the Xn-U Address Indication procedure as specified in TS 37.340 [8].

**Interactions with the S-NG-RAN node initiated S-NG-RAN node Modification:**

If the *SN triggered* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall consider that the procedure has been initiated in response to the previously initiated S-NG-RAN node initiated S-NG-RAN node Modification procedure.

<NEXT CHANGES>

8.3.10.3 Successful Operation – S-NG-RAN node initiated

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**Figure 8.3.10.3-1: Notification Control Indication procedure, S-NG-RAN node initiated, successful operation.**

The S-NG-RAN node initiates the procedure by sending the NOTIFICATION CONTROL INDICATION message to the M-NG-RAN node.

This procedure is triggered to notify the M-NG-RAN node that for MN-terminated bearers resources requested from the S-NG-RAN node can either not fulfil the GFBR anymore or that the GFBR can be fulfilled again, as specified in TS 37.340 [8]. For a QoS flow indicated as not fulfilled anymore the S-NG-RAN node may also indicate an alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE.

This procedure is triggered to notify the M-NG-RAN node that resources requested for SN-terminated bearers can either not fulfil the GFBR anymore or that the GFBR can be fulfilled again, as specified in TS 37.340 [8]. For a QoS flow indicated as not fulfilled anymore the S-NG-RAN node may also indicate an alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE.

<NEXT CHANGES>

9.2.1.6 PDU Session Resource Setup Response Info – SN terminated

This IE contains the result of the addition of S-NG-RAN node resources related to a PDU session for DRBs configured with an SN terminated bearer option.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| DL NG-U UP TNL Information at NG-RAN | M |  | UP Transport Layer Information 9.2.3.30 | S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs. | – |  |
| **DRBs To Be Setup List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Setup Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>SN UL PDCP UP TNL Information | M |  | UP Transport Parameters 9.2.3. 76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs. | – |  |
| >>DRB QoS | M |  | QoS Flow Level QoS Parameters9.2.3.5 |  | – |  |
| >>PDCP SN Length | O |  | 9.2.3.63 | Indicates the PDCP SN length of the DRB. | – |  |
| >>RLC Mode | M |  | 9.2.3.28 | Indicates the RLC mode to be used in the assisting node. | – |  |
| >>secondary SN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication. | – |  |
| >>Duplication Activation | O |  | 9.2.3.71 | Information on the initial state of UL PDCP duplication.This IE is ignored if the *RLC Duplication Information* IE is present. | – |  |
| >>UL Configuration | O |  | 9.2.3.75 | Information about UL usage in the M-NG-RAN node. | – |  |
| **>>QoS Flows Mapped To DRB List** |  | *1* |  |  | – |  |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | – |  |
| >>>>QoS Flow Identifier | M |  | 9.2.3.10 |  | – |  |
| >>>>MCG requested GBR QoS Flow Information  | O |  | GBR QoS Flow Information9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part.  | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| >>>>Current QoS Parameters Set Index | O |  | Alternative QoS Parameters Set Index 9.2.3.103 |  | YES | ignore |
| **>>Additional PDCP Duplication TNL List** |  | *0..1* |  |  | YES | Ignore |
| **>>>Additional PDCP Duplication TNL Item** |  | *1 .. <maxnoofAdditionalPDCPDuplicationTNL>* |  |  | – |  |
| >>>>Additional PDCP Duplication UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication. | – |  |
| >>RLC Duplication Information | O |  | 9.2.3.111 | . | – |  |
| Data Forwarding Info from target NG-RAN node | O |  | 9.2.1.16 |  | – |  |
| QoS Flows Not Admitted List | O |  | QoS Flow List with Cause9.2.1.4 |  | – |  |
| Security Result | O |  | 9.2.3.67 |  | – |  |
| DRB IDs taken into use | O |  | DRB List 9.2.1.29 | Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8]. | YES | reject |
| Redundant DL NG-U UP TNL Information at NG-RAN | O |  | UP Transport Layer Information9.2.3.30 | S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs for the redundant transmission. | YES | ignore |
| Used RSN Information | O |  | Redundant PDU Session Information9.2.3.112 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs allowed towards one UE. Value is 32.  |
| maxnoofQoSFlows | Maximum no. of QoS flows. Value is 64 |
| maxnoofAdditionalPDCPDuplicationTNL | Maximum no. of additional PDCP Duplication TNL. Value is 2. |

<NEXT CHANGES>

9.2.1.8 PDU Session Resource Setup Response Info – MN terminated

This IE contains the result of the addition of S-NG-RAN node resources related to a PDU session for DRBs configured with an MN terminated bearer option.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| **DRBs Admitted List** |  | *1* |  |  | – | – |
| **>DRBs Admitted Item** |  | *1 .. <maxnoofDRBs>* |  |  | – | – |
| >>DRB ID | M |  | 9.2.3.33 |  | – | – |
| >>SN DL SCG UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB’s Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs. | – | – |
| >>secondary SN DL SCG UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB’s Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of PDCP duplication. | – | – |
| >>LCID | O |  | 9.2.3.70 | LCID or LCID for split secondary path for fallback to split bearer for primary path if PDCP duplication is applied | – | – |
| **>>Additional PDCP Duplication TNL List** |  | *0..1* |  |  | YES | Ignore |
| **>>>Additional PDCP Duplication TNL Item** |  | *1 .. <maxnoofAdditionalPDCPDuplicationTNL>* |  |  | – |  |
| >>>>Additional PDCP Duplication UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB’s Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of additional PDCP duplication. | – |  |
| **>>QoS Flows Mapped To DRB List** |  | *0..1* |  |  | YES | ignore |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | – |  |
| >>>>QoS Flow Identifier  | M |  | 9.2.3.10 |  | – |  |
| >>>>Current QoS Parameters Set Index | M |  | Alternative QoS Parameters Set Index 9.2.3.103 |  | – |  |
| **DRBs Not Admitted To Be Setup or Modified List** | O |  | DRB List with Cause9.2.1.28 |  | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofDRBs | Maximum no. of DRBs allowed towards one UE. Value is 32.  |

<NEXT CHANGES>

9.2.1.10 PDU Session Resource Modification Response Info – SN terminated

This IE contains the PDU session resource related result of an M-NG-RAN node initiated request to modify DRBs configured with an SN terminated bearer option.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| DL NG-U UP TNL Information at NG-RAN | O |  | UP Transport Layer Information 9.2.3.30 | S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs. | – |  |
| **DRBs To Be Setup List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Setup Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>SN UL PDCP UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs. | – |  |
| >>DRB QoS | M |  | QoS Flow Level QoS Parameters9.2.3.5 |  | – |  |
| >>PDCP SN Length | O |  | 9.2.3.63 | Indicates the PDCP SN length of the DRB. | – |  |
| >>RLC Mode | M |  | 9.2.3.28 | Indicates the RLC mode to be used in the assisting node. | – |  |
| >>secondary SN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication. | – |  |
| >>Duplication Activation | O |  | 9.2.3.71 | Information on the initial state of UL PDCP duplication.This IE is ignored if the *RLC Duplication Information* IE is present. | – |  |
| >>UL Configuration | O |  | 9.2.3.75 | Information about UL usage in the S-NG-RAN node. | – |  |
| **>>QoS Flows Mapped To DRB List** |  | *1* |  |  | – |  |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | – |  |
| >>>>QoS Flow Identifier  | M |  | 9.2.3.10 |  | – |  |
| >>>>MCG requested GBR QoS Flow Information  | O |  | GBR QoS Flow Information9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part.  | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| >>>>Current QoS Parameters Set Index | O |  | Alternative QoS Parameters Set Index 9.2.3.103 |  | YES | ignore |
| **>>Additional PDCP Duplication TNL List** |  | *0..1* |  |  | YES | Ignore |
| **>>>Additional PDCP Duplication TNL Item** |  | *1 .. <maxnoofAdditionalPDCPDuplicationTNL>* |  |  | – |  |
| >>>>Additional PDCP Duplication UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication. | – |  |
| >>RLC Duplication Information | O |  | 9.2.3.111 |  | YES | ignore |
| Data Forwarding Info from target NG-RAN node | O |  | 9.2.1.16 | Applicable for the QoS flows in DRBs to be setup. | – |  |
| **DRBs To Be Modified List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Modified Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>SN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs. | – |  |
| >>DRB QoS | O |  | QoS Flow Level QoS Parameters9.2.3.5 |  | – |  |
| **>>QoS Flows Mapped to DRB List** |  | *0..1* |  | Overwriting the existing QoS Flow List | – |  |
| **>>>QoS Flows Mapped to DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | – |  |
| >>>>QoS Flow Identifier  | M |  | 9.2.3.10 |  | – |  |
| >>>>MCG requested GBR QoS Flow Information  | O |  | GBR QoS Flow Information9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part.  | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| >>>>Current QoS Parameters Set Index | O |  | Alternative QoS Parameters Set Index 9.2.3.103 |  | YES | ignore |
| **>>Additional PDCP Duplication TNL List** |  | *0..1* |  |  | YES | Ignore |
| **>>>Additional PDCP Duplication TNL Item** |  | *1 .. <maxnoofAdditionalPDCPDuplicationTNL>* |  |  | – |  |
| >>>>Additional PDCP Duplication UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication. | – |  |
| >>RLC Duplication Information | O |  | 9.2.3.111 |  | YES | Ignore |
| >>secondary SN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication. | YES | ignore |
| >>PDCP Duplication Configuration | O |  | 9.2.3.86 |  | YES | ignore |
| >>Duplication Activation | O |  | 9.2.3.71 |  | YES | ignore |
| **DRBs To Be Released List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Released Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>Cause | O |  | 9.2.3.2 |  | – |  |
| Data Forwarding and Offloading Info from source NG-RAN node | O |  | 9.2.1.17 | Contains DL Data Forwarding indications for QoS Flows removed from the SDAP in the SN. | – |  |
| QoS Flows Not Admitted to be Added List | O |  | QoS Flow List with Cause9.2.1.4 |  | – |  |
| QoS Flows Released List | O |  | QoS Flow List with Cause9.2.1.4 |  | – |  |
| DRB IDs taken into use | O |  | DRB List 9.2.1.29 | Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8]. | YES | reject |
| Redundant DL NG-U UP TNL Information at NG-RAN | O |  | UP Transport Layer Information9.2.3.30 | S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs for the redundant transmission. | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofDRBs | Maximum no. of DRBs allowed towards one UE. Value is 32.  |
| maxnoofQoSFlows | Maximum no. of QoS flows. Value is 64. |
| maxnoofAdditionalPDCPDuplicationTNL | Maximum no. of additional PDCP Duplication TNL. Value is 2. |

<NEXT CHANGES>

9.2.1.12 PDU Session Resource Modification Response Info – MN terminated

This IE contains the PDU session resource related result of an M-NG-RAN node initiated modification of DRBs configured with an MN terminated bearer option.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| **DRBs Admitted to be Setup or Modified List** |  | *1* |  |  | – |  |
| **>DRBs Admitted to be Setup or Modified Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>SN DL SCG UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB’s Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs. | – |  |
| >>secondary SN DL SCG UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB’s Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of PDCP duplication. | – |  |
| >>LCID | O |  | 9.2.3.70 | LCID or LCID for split secondary path for fallback to split bearer for primary path if PDCP duplication is applied | – |  |
| **>>Additional PDCP Duplication TNL List** |  | *0..1* |  |  | YES | Ignore |
| **>>>Additional PDCP Duplication TNL Item** |  | *1 .. <maxnoofAdditionalPDCPDuplicationTNL>* |  |  | – |  |
| >>>>Additional PDCP Duplication UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB’s Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of additional PDCP duplication. | – |  |
| **>>QoS Flows Mapped To DRB List** |  | *0..1* |  |  | YES | ignore |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | – |  |
| >>>>QoS Flow Identifier  | M |  | 9.2.3.10 |  | – |  |
| >>>>Current QoS Parameters Set Index | O |  | Alternative QoS Parameters Set Index 9.2.3.103 |  | – |  |
| DRBs Released List | O |  | DRB List9.2.1.29 |  | – |  |
| DRBs Not Admitted To Be Setup or Modified List | O |  | DRB List with Cause9.2.1.28 |  | – |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofDRBs | Maximum no. of DRBs allowed towards one UE. Value is 32.  |
| maxnoofAdditionalPDCPDuplicationTNL | Maximum no. of additional PDCP Duplication TNL. Value is 2. |

<NEXT CHANGES>

9.3.5 Information Element definitions

-- ASN1START

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-- Information Element Definitions

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

<Unchanged Text Omitted>

 id-UsedRSNInformation,

 id-RLCDuplicationInformation,

 id-CSI-RSTransmissionIndication,

 id-UERadioCapabilityID,

 id-secondary-SN-UL-PDCP-UP-TNLInfo,

 id-pdcpDuplicationConfiguration,

 id-duplicationActivation,

 id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated,

 maxEARFCN,

 maxnoofAllowedAreas,

 maxnoofAMFRegions,

 maxnoofAoIs,

 maxnoofBPLMNs,

 maxnoofCAGs,

 maxnoofCAGsperPLMN,

 maxnoofCellsinAoI,

<Unchanged Text Omitted>

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

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-- PDU Session Resource Setup Response Info - SN terminated

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

PDUSessionResourceSetupResponseInfo-SNterminated ::= SEQUENCE {

 dL-NG-U-TNLatNG-RAN UPTransportLayerInformation,

 dRBsToBeSetup DRBsToBeSetupList-SetupResponse-SNterminated OPTIONAL,

 dataforwardinginfoTarget DataForwardingInfoFromTargetNGRANnode OPTIONAL,

 qosFlowsNotAdmittedList QoSFlows-List-withCause OPTIONAL,

 securityResult SecurityResult OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {PDUSessionResourceSetupResponseInfo-SNterminated-ExtIEs} } OPTIONAL,

 ...

}

PDUSessionResourceSetupResponseInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-DRB-IDs-takenintouse CRITICALITY reject EXTENSION DRB-List PRESENCE optional}|

 { ID id-Redundant-DL-NG-U-TNLatNG-RAN CRITICALITY ignore EXTENSION UPTransportLayerInformation PRESENCE optional}|

 { ID id-UsedRSNInformation CRITICALITY ignore EXTENSION RedundantPDUSessionInformation PRESENCE optional},

 ...

}

DRBsToBeSetupList-SetupResponse-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeSetupList-SetupResponse-SNterminated-Item

DRBsToBeSetupList-SetupResponse-SNterminated-Item ::= SEQUENCE {

 drb-ID DRB-ID,

 sN-UL-PDCP-UP-TNLInfo UPTransportParameters,

 dRB-QoS QoSFlowLevelQoSParameters,

 pDCP-SNLength PDCPSNLength OPTIONAL,

 rLC-Mode RLCMode,

 uL-Configuration ULConfiguration OPTIONAL,

 secondary-SN-UL-PDCP-UP-TNLInfo UPTransportParameters OPTIONAL,

 duplicationActivation DuplicationActivation OPTIONAL,

 qoSFlowsMappedtoDRB-SetupResponse-SNterminated QoSFlowsMappedtoDRB-SetupResponse-SNterminated,

 iE-Extensions ProtocolExtensionContainer { {DRBsToBeSetupList-SetupResponse-SNterminated-Item-ExtIEs} } OPTIONAL,

 ...

}

DRBsToBeSetupList-SetupResponse-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-Additional-PDCP-Duplication-TNL-List CRITICALITY ignore EXTENSION Additional-PDCP-Duplication-TNL-List PRESENCE optional}|

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

 ...

}

QoSFlowsMappedtoDRB-SetupResponse-SNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF

 QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item

QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item ::= SEQUENCE {

 qoSFlowIdentifier QoSFlowIdentifier,

 mCGRequestedGBRQoSFlowInfo GBRQoSFlowInfo OPTIONAL,

 qosFlowMappingIndication QoSFlowMappingIndication OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item-ExtIEs} } OPTIONAL,

 ...

}

QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-CurrentQoSParaSetIndex CRITICALITY ignore EXTENSION QoSParaSetIndex PRESENCE optional },

 ...

}

<Unchanged Text Omitted>

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

--

-- PDU Session Resource Setup Response Info - MN terminated

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

PDUSessionResourceSetupResponseInfo-MNterminated ::= SEQUENCE {

 dRBsAdmittedList DRBsAdmittedList-SetupResponse-MNterminated,

 iE-Extensions ProtocolExtensionContainer { {PDUSessionResourceSetupResponseInfo-MNterminated-ExtIEs} } OPTIONAL,

 ...

}

PDUSessionResourceSetupResponseInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 {ID id-DRBsNotAdmittedSetupModifyList CRITICALITY ignore EXTENSION DRB-List-withCause PRESENCE optional},

 ...

}

DRBsAdmittedList-SetupResponse-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsAdmittedList-SetupResponse-MNterminated-Item

DRBsAdmittedList-SetupResponse-MNterminated-Item ::= SEQUENCE {

 drb-ID DRB-ID,

 sN-DL-SCG-UP-TNLInfo UPTransportParameters,

 secondary-SN-DL-SCG-UP-TNLInfo UPTransportParameters OPTIONAL,

 lCID LCID OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {DRBsAdmittedList-SetupResponse-MNterminated-Item-ExtIEs} } OPTIONAL,

 ...

}

DRBsAdmittedList-SetupResponse-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-Additional-PDCP-Duplication-TNL-List CRITICALITY ignore EXTENSION Additional-PDCP-Duplication-TNL-List PRESENCE optional}|

 { ID id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated CRITICALITY ignore EXTENSION QoSFlowsMappedtoDRB-SetupResponse-MNterminated PRESENCE optional},

 ...

}

QoSFlowsMappedtoDRB-SetupResponse-MNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsMappedtoDRB-SetupResponse-MNterminated-Item

QoSFlowsMappedtoDRB-SetupResponse-MNterminated-Item ::= SEQUENCE {

 qoSFlowIdentifier QoSFlowIdentifier,

 currentQoSParaSetIndex QoSParaSetIndex,

 ...

}

<Unchanged Text Omitted>

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

--

-- PDU Session Resource Modification Response Info - MN terminated

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

PDUSessionResourceModificationResponseInfo-MNterminated ::= SEQUENCE {

 dRBsAdmittedList DRBsAdmittedList-ModificationResponse-MNterminated,

 dRBsReleasedList DRB-List OPTIONAL,

 dRBsNotAdmittedSetupModifyList DRB-List-withCause OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {PDUSessionResourceModificationResponseInfo-MNterminated-ExtIEs} } OPTIONAL,

 ...

}

PDUSessionResourceModificationResponseInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

DRBsAdmittedList-ModificationResponse-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsAdmittedList-ModificationResponse-MNterminated-Item

DRBsAdmittedList-ModificationResponse-MNterminated-Item ::= SEQUENCE {

 drb-ID DRB-ID,

 sN-DL-SCG-UP-TNLInfo UPTransportParameters OPTIONAL,

 secondary-SN-DL-SCG-UP-TNLInfo UPTransportParameters OPTIONAL,

 lCID LCID OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {DRBsAdmittedList-ModificationResponse-MNterminated-Item-ExtIEs} } OPTIONAL,

 ...

}

DRBsAdmittedList-ModificationResponse-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-Additional-PDCP-Duplication-TNL-List CRITICALITY ignore EXTENSION Additional-PDCP-Duplication-TNL-List PRESENCE optional}|

 { ID id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated CRITICALITY ignore EXTENSION QoSFlowsMappedtoDRB-SetupResponse-MNterminated PRESENCE optional},

 ...

}

<Unchanged Text Omitted>

### 9.3.7 Constant definitions

-- ASN1START

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

--

-- Constant definitions

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

<Unchanged Text Omitted>

id-secondary-SN-UL-PDCP-UP-TNLInfo ProtocolIE-ID ::= 234

id-pdcpDuplicationConfiguration ProtocolIE-ID ::= 235

id-duplicationActivation ProtocolIE-ID ::= 236

id-QoSFlowMappedtoDRB-SetupResponse-MNterminated ProtocolIE-ID ::= xxx

END

-- ASN1STOP

<CHANGES END>