**3GPP TSG-RAN WG3 #108-e R3-204181**

**1-12 June 2020**

**Online**

**Agenda item:** 17.2.2

**Source:** ZTE

**Title:** (TP for Introduction of NR\_IIOT support to TS 38.423) Initial UL duplication configuration

**Document for:** Discussion and Approval

# 1 Introduction

Captured the following agreement

After online, the following agreement is achieved.

1) PDCP hosting node provides the initial activation state

More, the following agreement needs to be further checked by Ericsoon.

2) PDCP hosting node informs the assisting node the primary path location (Ericsson needs to further check)

This TP based on the above agreements (assumed the above agreement 2) is also OK)

In this TP, one new IE named as ***RLC Duplication Information*** is introduced **in case of more than two RLC entities** configured, instead of existing *Duplication Activation* IE, including two sub IE ***RLC Activation Status*** and ***Primary RLC Indication***.

RLC Duplication Information (new IE)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| >>RLC Duplication Information | O |  | RLC Duplication Information  9.2.3.x | If this IE is included, the *Duplication Activation* IE shall be ignored. |

#### 9.2.3.x RLC Duplication Information

This IE indicate the RLC duplication configuration in case of the indicated DRB configured with more than two RLC entities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| RLC Activation Status | M |  | BIT STRING (SIZE(3)) | This IE indicates information on the initial secondary RLC activation state of UL PDCP duplication. Each position in the bitmap represents a secondary RLC entity in ascending order by the LCH ID of the cell group. The position exceeding the number of secondary RLC entities of the cell group shall be ignored.  Value '1' is activated. Value '0' is deactivated. |
| Primary RLC Indication | M |  | ENUMERATED (  True, False, …) | This IE indicates whether the primary RLC entity located at the assisting node. |

In this contribution, we provide the corresponding TP to TS38.423 BL CR [2].

# 2 References

1. R3-203174, Consideration on UL PDCP duplication, ZTE
2. R3-203074,Introduction of NR\_IIOT support to TS 38.423, Ericsson

# 3 Annex: Text Proposal for TS 38.423

**------------------------------------------**

**First Change**

**------------------------------------------**

### 8.3.3 M-NG-RAN node initiated S-NG-RAN node Modification Preparation

#### 8.3.3.1 General

This procedure is used to enable an M-NG-RAN node to request an S-NG-RAN node to either modify the UE context at the S-NG-RAN node or to query the current SCG configuration for supporting delta signalling in M-NG-RAN node initiated S-NG-RAN node change, or to provide the S-RLF-related information to the S-NG-RAN node.

The procedure uses UE-associated signalling.

#### 8.3.3.2 Successful Operation

<Unchanged Text Omitted>

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. And 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 one secondary RLC entity.

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.

<Unchanged Text Omitted>

**------------------------------------------**

**Next Change**

**------------------------------------------**

### 8.3.4 S-NG-RAN node initiated S-NG-RAN node Modification

#### 8.3.4.1 General

This procedure is used by the S-NG-RAN node to modify the UE context in the S-NG-RAN node.

The procedure uses UE-associated signalling.

#### 8.3.4.2 Successful Operation

<Unchanged Text Omitted>

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Required Info – SN terminated* IE is contained in the S-NODE MODIFICATION REQUIRED message and set to "configured", the M-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 REQUIRED message contains the *Duplication Activation* IE, the M-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication. And if the S-NODE MODIFICATION REQUIRED 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 one secondary RLC entity..

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Required Info – SN terminated* IE is contained in the S-NODE MODIFICATION REQUIRED message and set to "de-configured", the M-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.

<Unchanged Text Omitted>

**------------------------------------------**

**Next Change**

**------------------------------------------**

#### 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 Parameters  9.2.3.5 |  | – |  |
| >>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 Information  9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part. | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| **>>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.x | . | – |  |
| Data Forwarding Info from target NG-RAN node | O |  | 9.2.1.16 |  | – |  |
| QoS Flows Not Admitted List | O |  | QoS Flow List with Cause  9.2.1.4 |  | – |  |
| 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 Information  9.2.3.30 | 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 Information  9.2.3.xx | This IE may need to be refined. | 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. |

#### 9.2.1.7 PDU Session Resource Setup Info – MN terminated

This IE contains information for 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 |
| PDU Session Type | M |  | 9.2.3.19 |  | - | - |
| **DRBs To Be Setup List** |  | *1* |  |  | - | - |
| **>DRBs to Be Setup Item** |  | *1 .. <maxnoofDRBs>* |  |  | - | - |
| >>DRB ID | M |  | 9.2.3.33 |  | - | - |
| >>MN UL PDCP UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | M-NG-RAN node endpoint(s) of a DRB’s Xn-U transport bearer at its PDCP resource. For delivery of UL PDUs. | - | - |
| >>RLC Mode | M |  | 9.2.3.28 | Indicates the RLC mode to be used in the assisting node. | - | - |
| >>UL Configuration | O |  | 9.2.3.75 | Information about UL usage in the S-NG-RAN node. | - | - |
| >>DRB QoS | M |  | QoS Flow Level QoS Parameters  9.2.3.5 |  | - | - |
| >>PDCP SN Length | O |  | 9.2.3.63 | Indicates the PDCP SN length of the DRB. | - | - |
| >>secondary MN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | M-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. | - | - |
| **>>QoS Flows Mapped To DRB List** |  | *1* |  |  | - | - |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | - | - |
| >>>>QoS Flow Identifier | M |  | 9.2.3.10 |  | - | - |
| >>>>QoS Flow Level QoS Parameters | M |  | 9.2.3.5 |  | - | - |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | - | - |
| >>>>TSC Traffic Characteristics | O |  | 9.2.3.x |  | 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 | M-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.x |  | – |  |

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

#### 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 Parameters  9.2.3.5 |  | – |  |
| >>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 Information  9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part. | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| **>>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 |  | RLC Duplication Information  9.2.3.x |  | – |  |
| 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 Parameters  9.2.3.5 |  | – |  |
| **>>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 Information  9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part. | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| **>>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. | – | – |
| **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 Cause  9.2.1.4 |  | – |  |
| QoS Flows Released List | O |  | QoS Flow List with Cause  9.2.1.4 |  | – |  |
| 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 Information  9.2.3.30 | 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. |

#### 9.2.1.11 PDU Session Resource Modification Info – MN terminated

This IE contains information related to PDU session resource for an M-NG-RAN node initiated request to modify DRBs configured with an MN terminated bearer option.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| PDU Session Type | M |  | 9.2.3.19 |  | – |  |
| **DRBs To Be Setup List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Setup Item** |  | *1 .. <maxnoof DRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>MN UL PDCP UP TNL Information | M |  | UP Transport Parameters 9.2.3.76 | M-NG-RAN node endpoint(s) of a DRB’s Xn transport bearer at its PDCP resource. For delivery of UL PDUs. | – |  |
| >>RLC Mode | M |  | 9.2.3.28 | Indicates the RLC mode to be used in the assisting node. | – |  |
| >>UL Configuration | O |  | 9.2.3.75 | Information about UL usage in the S-NG-RAN node. | – |  |
| >>DRB QoS | M |  | QoS Flow Level QoS Parameters  9.2.3.5 |  | – |  |
| >>PDCP SN Length | O |  | 9.2.3.63 | Indicates the PDCP SN length of the DRB. | – |  |
| >>secondary MN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | M-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. | – |  |
| **>>QoS Flows Mapped to DRB List** |  | *1* |  |  | – |  |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | – |  |
| >>>>QoS Flow Identifier | M |  | 9.2.3.10 |  | – |  |
| >>>>QoS Flow Level QoS Parameters | M |  | 9.2.3.5 |  | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| **>>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 | M-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 |  | RLC Duplication Information  9.2.3.x |  | – |  |
| **DRBs To Be Modified List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Modified Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>MN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | M-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 Parameters  9.2.3.5 |  | – |  |
| >>secondary MN UL PDCP UP TNL Information | O |  | UP Transport Parameters 9.2.3.76 | M-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. | – |  |
| >>UL Configuration | O |  | 9.2.3.75 | Information about UL usage in the S-NG-RAN node. | – |  |
| >>PDCP Duplication Configuration | O |  | 9.2.3.86 |  | – |  |
| >>Duplication Activation | O |  | 9.2.3.71 | This IE is ignored if the *RLC Duplication Information* IE is present. | – |  |
| **>>QoS Flows Mapped To DRB List** |  | *0..1* |  | Overwriting the existing QoS Flow List | – |  |
| **>>>QoS Flows Mapped To DRB Item** |  | *1 .. <maxnoof QoS Flows>* |  |  | – |  |
| >>>>QoS Flow Identifier | M |  | 9.2.3.10 |  | – |  |
| >>>>QoS Flow Level QoS Parameters | M |  | 9.2.3.5 |  | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| **>>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 | M-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 |  | RLC Duplication Information  9.2.3.x |  | – |  |
| DRBs To Be Released List | O |  | DRB List with Cause  9.2.1.28 |  | – |  |

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

**------------------------------------------**

**The next Change**

**------------------------------------------**

#### 9.2.1.20 PDU Session Resource Modification Required Info – SN terminated

This IE contains PDU session resource information of an S-NG-RAN node initiated modification request of 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-U transport bearer. For delivery of DL PDUs. | – |  |
| QoS Flows To Be Released List | O |  | QoS Flow List with Cause  9.2.1.4 |  | – |  |
| Data Forwarding and Offloading Info from source NG-RAN node | O |  | 9.2.1.17 | This IE only applies to QoS flows included in the *QoS FlowS To Be Released List* IE. | – |  |
| **DRBs To Be Setup List** |  | *0..1* |  |  | – |  |
| **>DRBs to Be Setup Item** |  | *1 .. <maxnoofDRBs>* |  |  | – |  |
| >>DRB ID | M |  | 9.2.3.33 |  | – |  |
| >>PDCP SN Length | O |  | 9.2.3.63 | Indicates the PDCP SN length of the DRB. | – |  |
| >>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 Parameters  9.2.3.5 |  | – |  |
| >>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 Information  9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part. | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| >>RLC Mode | M |  | 9.2.3.28 | Indicates the RLC mode at the assisting node. | – |  |
| **>>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 |  | RLC Duplication Information  9.2.3.x |  | – |  |
| **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 Parameters  9.2.3.5 |  | – |  |
| >>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. | – |  |
| >>UL Configuration | O |  | 9.2.3.75 | Information about UL usage in the S-NG-RAN node. | – |  |
| >>PDCP Duplication Configuration | O |  | 9.2.3.86 |  | – |  |
| >>Duplication Activation | O |  | 9.2.3.71 | This IE is ignored if the *RLC Duplication Information* IE is present. | – |  |
| **>>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 Information  9.2.3.6 | This IE contains GBR QoS Flow Information necessary for the MCG part. | – |  |
| >>>>QoS Flow Mapping Indication | O |  | 9.2.3.79 |  | – |  |
| **>>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 |  | RLC Duplication Information  9.2.3.x |  | – |  |
| **DRBs To Be Released List** | O |  | DRB List with Cause  9.2.1.28 |  | – |  |

|  |  |
| --- | --- |
| 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 Change**

**------------------------------------------**

#### 9.2.3.x RLC Duplication Information

This IE indicate the duplication state of the secondary RLC entities of the Data Radio Bearer, and the primary path location as specified in TS 38.300 [9].

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RLC Duplication State List** |  | *1* |  |  |  |  |
| **>RLC Duplication State Items** | M | *1 .. <maxnoofRLCDuplicationstate>* |  | Each position in the list represents a secondary RLC entity in ascending order by the LCH ID in the order of MCG and SCG. |  |  |
| >>Duplication State | M |  | ENUMERATED (Active, Inactive, ...) |  |  |  |
| Primary Path Indication | O |  | ENUMERATED (True, False...) | This IE indicates whether the primary RLC entity located at the assisting node.  Value “True” indicates that the primary path is located at the assisting node.  Value “False” indicates that primary path is not located at the assisting node. |  |  |



|  |  |
| --- | --- |
| Range bound | Explanation |
| *maxnoofRLCDuplicationstate* | Maximum no of Secondary RLC entities. Value is 3. |

**------------------------------------------**

**Next Change**

**------------------------------------------**

### 9.3.5 Information Element definitions

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

--

-- Information Element Definitions

--

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

XnAP-IEs {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

**------------------------------------------**

**Next Change**

**------------------------------------------**

id-Secondary-MN-Xn-U-TNLInfoatM,

id-ULForwardingProposal,

id-DRB-IDs-takenintouse,

id-SplitSessionIndicator,

id-NonGBRResources-Offered,

id-ExtendedRATRestrictionInformation,

id-QoSMonitoringRequest,

id-Redundant-UL-NG-U-TNLatUPF, id-Redundant-DL-NG-U-TNLatNG-RAN,

id-CNPacketDelayBudgetDownlink,

id-CNPacketDelayBudgetUplink,

id-ExtendedPacketDelayBudget,

id-Additional-Redundant-UL-NG-U-TNLatUPF-List,

id-RedundantCommonNetworkInstance,

id-TSCTrafficCharacteristics,

id-RedundantQoSFlowIndicator,

id-Additional-PDCP-Duplication-TNL-List,

id-RedundantPDUSessionInformation,

id-UsedRSNInformation,

id-RLCDuplicationIndication,

maxEARFCN,

maxnoofAllowedAreas,

maxnoofAMFRegions,

maxnoofAoIs,

maxnoofBPLMNs,

**------------------------------------------**

**Next Change**

**------------------------------------------**

maxnoofTAIsinAoI,

maxnoofTNLAssociations,

maxnoofUEContexts,

maxNRARFCN,

maxNrOfErrors,

maxnoofRANNodesinAoI,

maxnooftimeperiods,

maxnoofslots,

maxnoofExtTLAs,

maxnoofGTPTLAs,

MaxnoofAdditionalPDCPDuplicationTNL,

maxnoofPDCPDuplicationInformation

FROM XnAP-Constants

**------------------------------------------**

**Next Change**

**------------------------------------------**

-- P

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

--

-- PDU Session Resource Setup Response Info - SN terminated

--

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

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},

...

}

**------------------------------------------**

**Next Change**

**------------------------------------------**

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

--

-- PDU Session Resource Setup Info - MN terminated

--

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

DRBsToBeSetupList-Setup-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-RLCDuplicationInformation CRITICALITY ignore EXTENSION RLCDuplicationInformation PRESENCE optional},

...

}

**------------------------------------------**

**Next Change**

**------------------------------------------**

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

--

-- PDU Session Resource Modification Info - MN terminated

--

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

DRBsToBeModifiedList-Modification-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF

DRBsToBeModifiedList-Modification-MNterminated-Item

DRBsToBeModifiedList-Modification-MNterminated-Item ::= SEQUENCE {

drb-ID DRB-ID,

mN-UL-PDCP-UP-TNLInfo UPTransportParameters OPTIONAL,

dRB-QoS QoSFlowLevelQoSParameters OPTIONAL,

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

uL-Configuration ULConfiguration OPTIONAL,

pdcpDuplicationConfiguration PDCPDuplicationConfiguration OPTIONAL,

duplicationActivation DuplicationActivation OPTIONAL,

qoSFlowsMappedtoDRB-Setup-MNterminated QoSFlowsMappedtoDRB-Setup-MNterminated OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {DRBsToBeModifiedList-Modification-MNterminated-Item-ExtIEs} } OPTIONAL,

...

}

DRBsToBeModifiedList-Modification-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-RLCDuplicationInformation CRITICALITY ignore EXTENSION RLCDuplicationInformation PRESENCE optional},

...

}

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

--

-- PDU Session Resource Modification Response Info - SN terminated

--

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

DRBsToBeModifiedList-ModificationResponse-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF

DRBsToBeModifiedList-ModificationResponse-SNterminated-Item

DRBsToBeModifiedList-ModificationResponse-SNterminated-Item ::= SEQUENCE {

drb-ID DRB-ID,

sN-UL-PDCP-UP-TNLInfo UPTransportParameters OPTIONAL,

dRB-QoS QoSFlowLevelQoSParameters OPTIONAL,

qoSFlowsMappedtoDRB-SetupResponse-SNterminated QoSFlowsMappedtoDRB-SetupResponse-SNterminated OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {DRBsToBeModifiedList-ModificationResponse-SNterminated-Item-ExtIEs} } OPTIONAL,

...

}

DRBsToBeModifiedList-ModificationResponse-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},

...

}

**------------------------------------------**

**Next Change**

**------------------------------------------**

ResetResponsePartialReleaseItem ::= SEQUENCE {

ng-ran-node1UEXnAPID NG-RANnodeUEXnAPID OPTIONAL,

ng-ran-node2UEXnAPID NG-RANnodeUEXnAPID OPTIONAL,

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

...

}

ResetResponsePartialReleaseItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

RLCDuplicationInformation ::= SEQUENCE {

rLCDuplicationStateList RLCDuplicationStateList,

rLC-PrimaryIndicator ::= ENUMERATED {true, false},

iE-Extensions ProtocolExtensionContainer { {RLCDuplicationInformation-ExtIEs} } OPTIONAL

}

RLCDuplicationInformation-ItemExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

RLCDuplicationStateList ::= SEQUENCE (SIZE(1..maxnoofPDCPDuplicationInformation)) OF RLCDuplicationState-Item

RLCDuplicationState-Item ::= SEQUENCE {

duplicationState ENUMERATED {Active,Inactive, ...},

iE-Extensions ProtocolExtensionContainer { {RLCDuplicationState-ItemExtIEs } } OPTIONAL,

...

}

RLCDuplicationState-ItemExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

RLCMode ::= ENUMERATED {

rlc-am,

rlc-um-bidirectional,

rlc-um-unidirectional-ul,

rlc-um-unidirectional-dl,

...

}

### 9.3.7 Constant definitions

-- ASN1START

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

--

-- Constant definitions

--

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

**------------------------------------------**

**Next Change**

**------------------------------------------**

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

--

-- Constant definitions

--

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

maxNRARFCN INTEGER ::= 3279165

maxNrOfErrors INTEGER ::= 256

maxnoofslots INTEGER ::= 320

maxnoofExtTLAs INTEGER ::= 16

maxnoofGTPTLAs INTEGER ::= 16

maxnoofAdditionalPDCPDuplicationTNL INTEGER ::= 2

maxnoofPDCPDuplicationInformation INTEGER ::= 3

**------------------------------------------**

**Next Change**

**------------------------------------------**

id-AdmittedFastMCGRecoveryViaSRB3 ProtocolIE-ID ::= 149

id-RequestedFastMCGRecoveryViaSRB3Release ProtocolIE-ID ::= 150

id-AdmittedFastMCGRecoveryViaSRB3Release ProtocolIE-ID ::= 151

id-FastMCGRecoveryRRCTransfer-MN-to-SN ProtocolIE-ID ::= 152

id-ExtendedRATRestrictionInformation ProtocolIE-ID ::= 153

id-QoSMonitoringRequest ProtocolIE-ID ::= 154

id-FiveGCMobilityRestrictionListContainer ProtocolIE-ID ::= 155

id-PartialListIndicator-EUTRA ProtocolIE-ID ::= 156

id-CellAndCapacityAssistanceInfo-EUTRA ProtocolIE-ID ::= 157

id-Redundant-UL-NG-U-TNLatUPF ProtocolIE-ID ::= xx1

id-CNPacketDelayBudgetDownlink ProtocolIE-ID ::= xx2

id-CNPacketDelayBudgetUplink ProtocolIE-ID ::= xx21

id-Additional-Redundant-UL-NG-U-TNLatUPF-List ProtocolIE-ID ::= xx3

id-RedundantCommonNetworkInstance ProtocolIE-ID ::= xx4

id-TSCTrafficCharacteristics ProtocolIE-ID ::= xx5

id-RedundantQoSFlowIndicator ProtocolIE-ID ::= xx6

id-Redundant-DL-NG-U-TNLatNG-RAN ProtocolIE-ID ::= xx8id-ExtendedPacketDelayBudget ProtocolIE-ID ::= xx10

id-Additional-PDCP-Duplication-TNL-List ProtocolIE-ID ::= xx11

id-RedundantPDUSessionInformation ProtocolIE-ID ::= xx12

id-UsedRSNInformation ProtocolIE-ID ::= xx1x

id-RLCDuplicationInformation ProtocolIE-ID ::= XX1Y

*End of Text Proposal for TS 38.423*