**3GPP TSG-RAN WG3 Meeting #114-e *R3-215938***

**E-meeting, 1-11 Nov 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **38.413** | **CR** | **0693** | **rev** | **1** | **Current version:** | 16.7.0 |  |
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| *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 | **X** |

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| ***Title:***  | Redundant network instance for split PDU session |
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| ***Source to WG:*** | Huawei, CATT, CMCC |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_IIOT-Core |  | ***Date:*** | 2021-11-01 |
|  |  |  |  |  |
| ***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)* |
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| ***Reason for change:*** | At last RAN3-113-e meeting, the set of CRs R3-214406/R3-214407 were agreed, to add **additional** network instance for additional TNL information in case of PDU session split. Also in case of Redundant data transmission via single UPF and single RAN node (as specified in TS 38.300), Redundant Common Network Instance IE is already signaled so that the NG-RAN node uses it when selecting transport network resource for redundant transmission as specified in TS 23.501. Then in case of PDU session split, the **additional** redundant network instance may be needed for MR-DC caes. But it can not derive this since the agreed CRs above did not consider the redundant data transmission.  |
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| ***Summary of change:*** | * Clarifiy that in case of redundant data transmission for split PDU session case, the **additional** redundant network instance may be signalled to the NG-RAN node.

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).The impact can be considered isolated because the change only affects the redundant data transmission. |
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| ***Consequences if not approved:*** | It is ambiguous whether the newly introduced common instance in case of PDU session split is applicable for the redundant data transmission.   |
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| ***Clauses affected:*** | 8.2.1.2, 8.2.3.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS38.423 CR0696  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** | Rev0: R3-215366 Rev1: R3-215938 Update the procedure texts based on online discussion.  |

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| **Change Begins** |

### 8.2.1 PDU Session Resource Setup

#### 8.2.1.1 General

The purpose of the PDU Session Resource Setup procedure is to assign resources on Uu and NG-U for one or several PDU sessions and the corresponding QoS flows, and to setup corresponding DRBs for a given UE. The procedure uses UE-associated signalling.

#### 8.2.1.2 Successful Operation



Figure 8.2.1.2-1: PDU session resource setup: successful operation

**<Unchanged Text Omitted>**

For each PDU session, if the *Additional UL NG-U UP TNL Information* IE is included in the *PDU Session Resource Setup Request Transfer* IE contained in the PDU SESSION RESOURCE SETUP REQUEST message, the NG-RAN node may allocate for this split PDU session resources for an additional NG-U transport bearer for some or all of the QoS flows present in the *QoS Flow Setup Request List* IE and it shall indicate these QoS flows in the *Additional DL QoS Flow per TNL Information* IE in the *PDU Session Resource Setup Response Transfer* IE. In case the *Additional DL QoS Flow per TNL Information* IE is not included the SMF shall consider the proposed additional UL NG-U UP TNL information as available again. If the *Common Network Instance* IE is included in the *Additional UL NG-U UP TNL Information* IE, the NG-RAN shall, if supported, use it when selecting transport resource for the redundant transmission.

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource Setup Request Transfer* IE contained in the PDU SESSION RESOURCE SETUP REQUEST message and the *Common Network Instance* IE is not present, the NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [9].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource Setup Request Transfer* IE contained in the PDU SESSION RESOURCE SETUP REQUEST message, the NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [9].

For each PDU session, if the *Redundant UL NG-U UP TNL Information* IE is included in the *PDU Session Resource Setup Request Transfer* IE of the PDU SESSION RESOURCE SETUP REQUEST message, the 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 QoS Flow per TNL Information* IE in the *PDU Session Resource Setup Response Transfer* IE as described in TS 23.501 [9].

For each PDU session, if the *Additional Redundant UL NG-U UP TNL Information* IE is included in the *PDU Session Resource Setup Request Transfer* IE contained in the PDU SESSION RESOURCE SETUP REQUEST message, the NG-RAN node may allocate for this split PDU session resources for an additional redundant NG-U transport bearer for some or all of the QoS flows present in the *QoS Flow Setup Request List* IE and it shall indicate these QoS flows in the *Additional Redundant DL QoS Flow per TNL Information* IE in the *PDU Session Resource Setup Response Transfer* IE. In case the *Additional* *Redundant DL QoS Flow per TNL Information* IE is not included the SMF shall consider the proposed additional Redundant UL NG-U UP TNL information as available again. If the *Common Network Instance* IE is included in the *Additional Redundant UL NG-U UP TNL Information* IE, the NG-RAN shall, if supported, use it when selecting transport resource for the redundant transmission.

For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource Setup Request Transfer* IE contained in the PDU SESSION RESOURCE SETUP REQUEST message, the NG-RAN node shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [9].

**<Unchanged Text Omitted>**

### 8.2.3 PDU Session Resource Modify

#### 8.2.3.1 General

The purpose of the PDU Session Resource Modify procedure is to enable configuration modifications of already established PDU session(s) for a given UE. It is also to enable the setup, modification and release of the QoS flow for already established PDU session(s). The procedure uses UE-associated signalling.

#### 8.2.3.2 Successful Operation



Figure 8.2.3.2-1: PDU session resource modify: successful operation

**<Unchanged Text Omitted>**

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource Modify Request Transfer* IE contained in the PDU SESSION RESOURCE MODIFY REQUEST message and the *Common Network Instance* IE is not present, the NG-RAN node shall, if supported, use it as specified in TS 23.501 [9].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource Modify Request Transfer* IE contained in the PDU SESSION RESOURCE MODIFY REQUEST message, the NG-RAN node shall, if supported, use it as specified in TS 23.501 [9].

For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource Modify Request Transfer* IE contained in the PDU SESSION RESOURCE MODIFY REQUEST message, the NG-RAN node shall, if supported, use it for the redundant transmission as specified in TS 23.501 [9].

**<Unchanged Text Omitted>**

For each PDU session included in the *PDU Session Resource Modify Request List* IE:

- For each QoS flow included in the *QoS Flow Add or Modify Request List* IE, based on the *QoS Flow Level QoS Parameters* IE, the NG-RAN node may establish, modify or release the DRB configuration and may change allocation of resources on NG or Uu accordingly. The NG-RAN node shall associate each QoS flow accepted to setup or modify with a DRB of the PDU session. The associated DRB for the QoS flow accepted to modify may not change.

- For each QoS flow, if the *Redundant QoS Flow Indicator* IE is included, the NG-RAN node shall, if supported, store it and consider it for the redundant transmission as specified in TS 23.501 [9].

- For each QoS flow included in the *QoS Flow Add or Modify Request List* IE, if the *QoS Flow Add or Modify Request Item* IE is included for an existing *QoS Flow Identifier* IE, the NG-RAN node shall overwrite the content of the full *QoS Flow Add or Modify Request Item* IE.

- For each QoS flow included in the *QoS Flow to Release List* IE, the NG-RAN node shall de-associate the QoS flow with the previously associated DRB.

- If the *NAS-PDU* IE is received for the PDU session, the NG-RAN node shall pass it to the UE when modifying the Data Radio Bearer configuration. The NG-RAN node does not send the NAS PDU received for the PDU session when all the QoS flows to be added or modified are failed and no QoS flow was requested to be released, even if e.g. the NG-U UP TNL modification is successful.

- The NG-RAN node may change allocation of resources on NG according to the requested target configuration.

- If the *PDU Session Aggregate Maximum Bit Rate* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node shall store and use the received PDU Session Aggregate Maximum Bit Rate value when enforcing traffic policing for Non-GBR QoS flows for the concerned UE as specified in TS 23.501 [9].

- If the *UL NG-U UP TNL Information* IE in the *UL NG-U UP TNL Modify List* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node shall update the transport layer information for the uplink data accordingly for the concerned transport bearers identified by the *DL NG-U UP TNL Information* IE included in the *PDU Session Resource Modify Request Transfer* IE for the concerned PDU session.

- If the *Additional UL NG-U UP TNL Information* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node may allocate resources for an additional NG-U transport bearer for some or all of the QoS flows present in the *QoS Flow Add or Modify Request List* IE and it shall indicate these QoS flows in the *Additional DL QoS Flow per TNL Information* IE in the *PDU Session Resource Modify Response Transfer* IE. In case the *Additional DL QoS Flow per TNL Information* IE is not included the SMF shall consider the proposed additional UL NG-U UP TNL information as available again. If the *Common Network Instance* IE is included in the *Additional UL NG-U UP TNL Information* IE, the NG-RAN shall, if supported, use it when selecting transport resource for the redundant transmission.

- In case more than one NG-U transport bearers have been set up for the PDU session, if all the QoS flows associated to one existing NG-U transport bearer are included in the *QoS Flow to Release List* IE in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node and 5GC shall consider that the concerned NG-U transport bearer is removed for the PDU session, and both NG-RAN node and 5GC shall therefore consider the related NG-U UP TNL information as available again.

- If the *Redundant UL NG-U UP TNL Information* IE within the *UL NG-U UP TNL Modify List* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node shall, if supported, update the transport layer information for the uplink data accordingly for the concerned transport bearer identified by the *Redundant DL NG-U UP TNL Information* IE included in the *PDU Session Resource Modify Request Transfer* IE for the concerned PDU session.

- If the *Additional Redundant UL NG-U UP TNL Information* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node may allocate resources for an additional redundant NG-U transport bearer for some or all of the QoS flows present in the *QoS Flow Add or Modify Request List* IE and it shall, if supported, indicate these QoS flows in the *Additional Redundant DL QoS Flow per TNL Information* IE in the *PDU Session Resource Modify Response Transfer* IE. In case the *Additional Redundant DL QoS Flow per TNL Information* IE is not included the SMF shall consider the proposed additional Redundant UL NG-U UP TNL information as available again. If the *Common Network Instance* IE is included in the *Additional Redundant UL NG-U UP TNL Information* IE, the NG-RAN shall, if supported, use it when selecting transport resource for the redundant transmission.

- If the *Redundant UL NG-U UP TNL Information* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node may allocate resources for a redundant NG-U transport bearer for some or all of the QoS flows present in the *QoS Flow Add or Modify Request List* IE and it shall, if supported, indicate the corresponding NG-RAN endpoint of this NG-U transport bearer in the *Redundant DL NG-U UP TNL Information* IE in the *PDU Session Resource Modify Response Transfer* IE.

- If the *Security Indication* IE is included in the *PDU Session Resource Modify Request Transfer* IE, the NG-RAN node shall, if supported, only update the maximum integrity protected data rate uplink and/or the maximum integrity protected data rate downlink, and take them into account as defined in the PDU Session Resource Setup procedure.

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| **Change Ends** |