**3GPP TSG-RAN WG3 Meeting #115-e *R3-222613***

**E-meeting, 21 Feb – 3 Mar 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.463** | **CR** | **0688** | **rev** | **1** | **Current version:** | **16.8.0** |  |
|  | | | | | | | | |
| *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:*** | UDC for CU-CP/UP splitting scenario | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, CATT, ZTE, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_UDC-Core | | | | |  | ***Date:*** | | | 2022-02-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The Uplink Data Compression (UDC) Rel-17 WI is agreed in RP-211203.  This CR contains protocol changes to support the UDC. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Introduce the UDC parameters applicable for both NR UDC and E-UTRA UDC over the E1AP messages. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The UDC feature is not supported for CU-CP/UP splitting scenario. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.2, 8.3.1.2, 9.3.1.38, 9.3.1.40 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.460 CR 0057 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev0: R3-222134  Rev1: R3-222613  Update based on online comments. | | | | | | | | |

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| **Change Begins** |

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply.   
An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

5GC 5G Core Network

5QI 5G QoS Identifier

CAG Closed Access Group

CGI Cell Global Identifier

CHO Conditional Handover

CN Core Network

CP Control Plane

CPC Conditional PSCell Change

DAPS Dual Active Protocol Stack

DL Downlink

EHC Ethernet Header Compression

EN-DC E-UTRA-NR Dual Connectivity

EPC Evolved Packet Core

IAB Integrated Access and Backhaul

MCG Master Cell Group

NID Network Identifier

NPN Non-Public Network

PNI-NPN Public Network Integrated Non-Public Network

NSSAI Network Slice Selection Assistance Information

RANAC RAN Area Code

SCG Secondary Cell Group

SDAP Service Data Adaptation Protocol

SNPN Stand-alone Non-Public Network

S-NSSAI Single Network Slice Selection Assistance Information

TNLA Transport Network Layer Association

UDC Uplink Data Compression

**<Unchanged Text Omitted>**

### 8.3.1 Bearer Context Setup

#### 8.3.1.1 General

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

#### 8.3.1.2 Successful Operation



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

**<Unchanged Text Omitted>**

If the *Direct Forwarding Path Availability* IE set to “intra-system direct path available” is included in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall, if supported, assign the UP Transport Layer Information for intra-system direct data forwarding from the appropriate address space, if applicable.

If the *gNB-CU-UP UE E1AP ID* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may use it to identify the UE context as specified in TS 38.401 [2].

If the *UDC parameters* IE is included in the *PDCP Configuration* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may, if supported, take these parameters into account to perform appropriate uplink header compression for the concerned DRB.

**<Unchanged Text Omitted>**

#### 9.3.1.38 PDCP Configuration

This IE carries the PDCP configuration.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| PDCP SN UL Size | M |  | PDCP SN Size  9.3.1.61 | Indicates the PDCP SN UL size in bits. For more information see *PDCP-Config IE* in TS 38.331 [10].  Is ignored if received through *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message. | - | - |
| PDCP SN DL Size | M |  | PDCP SN Size  9.3.1.61 | Indicates the PDCP SN DL size in bits. For more information see *PDCP-Config IE* in TS 38.331 [10].  Is ignored if received through *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message. | - | - |
| RLC mode | M |  | ENUMERATED (RLC-TM, RLC-AM, RLC-UM-Bidirectional, RLC-UM-Unidirectional-UL, RLC-UM-Unidirectional-DL, …) | Indicates the RLC mode for the DRB. For more information see *PDCP-Config IE* in TS 38.331 [10].  Is ignored if received through *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message. | - | - |
| ROHC Parameters | O |  | 9.3.1.40 |  | - | - |
| T-Reordering Timer | O |  | 9.3.1.41 |  | - | - |
| Discard Timer | O |  | 9.3.1.42 |  | - | - |
| UL Data Split Threshold | O |  | 9.3.1.43 |  | - | - |
| PDCP Duplication | O |  | ENUMERATED (True, …) | Indicates whether PDCP duplication is to be configured for the DRB. This IE is ignored when the “*Additional PDCP duplication Information*” IE is present. | - | - |
| PDCP Re-establishment | O |  | ENUMERATED (true,…) | Indicates PDCP entity re-establishment to be triggered as defined in TS 38.323 [17] | - | - |
| PDCP Data Recovery | O |  | ENUMERATED (true,…) | Indicates PDCP data recovery to be triggered as defined in TS 38.323 [17] | - | - |
| Duplication Activation | O |  | ENUMERATED (  Active, Inactive, …) | Information on the initial state of DL PDCP duplication | - | - |
| Out Of Order Delivery | O |  | ENUMERATED (true,…) | Indicates whether or not outOfOrderDelivery specified in TS 38.323 [17] is configured. Out of order delivery is configured only when the radio bearer is established. | - | - |
| PDCP Status Report Indication | O |  | ENUMERATED (downlink, uplink, both, …) | For AM DRB, “downlink” indicates that the PDCP entity is configured to send PDCP status report(s) to the UE, and “uplink” indicates that the UE is configured to send PDCP status report(s), as specified in TS 38.323 [17]. “both” indicates that both “downlink” and “uplink” should be applied. | YES | ignore |
| Additional PDCP duplication Information | O |  | ENUMERATED (three, four, …) | Indicates the number of PDCP duplication configured when it is more than 2 for the DRB | YES | ignore |
| EHC Parameters | O |  | 9.3.1.90 |  | YES | Ignore |
| UDC Parameters | O |  | 9.3.1.aa |  | YES | ignore |

**<Unchanged Text Omitted>**

#### 9.3.1.aa UDC Parameters

This IE carries the UDC parameters for header compressions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Buffer Size | M |  | ENUMERATED (kbyte2, kbyte4, kbyte8, …) | Indicates the buffer size applied for UDC. For more information see *PDCP-Config IE* in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [x5] for eNB CP-UP separation. |
| Dictionary | O |  | ENUMERATED (sip-SDP, operator, …) | Indicates the which pre-defined dictionary is used for UDC. For more information see *PDCP-Config IE* in TS 38.331 [10] for gNB or ng-eNB CP-UP separation, or in TS 36.331 [x5] for eNB CP-UP separation. |
| Continue UDC | O |  | ENUMERATED (true, …) | For more information see description of drb-ContinueUDC in TS 38.331 [10] for gNB CP-UP separation. |

**<Unchanged Text Omitted>**

### 9.4.5 Information Element Definitions

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-- Information Element Definitions

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

**<Unchanged Text Omitted>**

id-MaxCIDEHCDL,

id-ignoreMappingRuleIndication,

id-EarlyDataForwardingIndicator,

id-QoSFlowsDRBRemapping,

id-UDC-Parameters,

maxnoofQoSParaSets,

maxnoofErrors,

**<Unchanged Text Omitted>**

PDCP-Configuration ::= SEQUENCE {

pDCP-SN-Size-UL PDCP-SN-Size,

pDCP-SN-Size-DL PDCP-SN-Size,

rLC-Mode RLC-Mode,

rOHC-Parameters ROHC-Parameters OPTIONAL,

t-ReorderingTimer T-ReorderingTimer OPTIONAL,

discardTimer DiscardTimer OPTIONAL,

uLDataSplitThreshold ULDataSplitThreshold OPTIONAL,

pDCP-Duplication PDCP-Duplication OPTIONAL,

pDCP-Reestablishment PDCP-Reestablishment OPTIONAL,

pDCP-DataRecovery PDCP-DataRecovery OPTIONAL,

duplication-Activation Duplication-Activation OPTIONAL,

outOfOrderDelivery OutOfOrderDelivery OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { PDCP-Configuration-ExtIEs } } OPTIONAL,

...

}

PDCP-Configuration-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-PDCP-StatusReportIndication CRITICALITY ignore EXTENSION PDCP-StatusReportIndication PRESENCE optional}|

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

{ ID id-EHC-Parameters CRITICALITY ignore EXTENSION EHC-Parameters PRESENCE optional}|

{ ID id-UDC-Parameters CRITICALITY ignore EXTENSION UDC-Parameters PRESENCE optional},

...

}

**<Unchanged Text Omitted>**

-- U

UDC-Parameters ::= SEQUENCE {

bufferSize BufferSize,

dictionary Dictionary OPTIONAL,

continueUDC ENUMERATED {true, ...} OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { UDC-Parameters-ExtIEs } } OPTIONAL

}

UDC-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

BufferSize ::= ENUMERATED {

kbyte2,

kbyte4,

kbyte8,

...

}

Dictionary ::= ENUMERATED {

sip-SDP,

operator,

...

}

UE-Activity ::= ENUMERATED {

active,

not-active,

...

}

UE-associatedLogicalE1-ConnectionItem ::= SEQUENCE {

gNB-CU-CP-UE-E1AP-ID GNB-CU-CP-UE-E1AP-ID OPTIONAL,

gNB-CU-UP-UE-E1AP-ID GNB-CU-UP-UE-E1AP-ID OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { UE-associatedLogicalE1-ConnectionItemExtIEs} } OPTIONAL,

...

}

UE-associatedLogicalE1-ConnectionItemExtIEs E1AP-PROTOCOL-EXTENSION ::= {

...

}

**<Unchanged Text Omitted>**

### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

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**<Unchanged Text Omitted>**

id-DirectForwardingPathAvailability ProtocolIE-ID ::= 139

id-EarlyDataForwardingIndicator ProtocolIE-ID ::= 140

id-QoSFlowsDRBRemapping ProtocolIE-ID ::= 141

id-UDC-Parameters ProtocolIE-ID ::= bbb

**<Unchanged Text Omitted>**

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| **Change Ends** |