3GPP TSG-RAN WG3 #115-e R3-222390

**E-meeting, 21st February – 3rd March 2022**

Source: CATT (moderator)

**Title:** **CB: # 1\_NRUDC**

Agenda Item: 8.1

Document for: Approval

# Introduction

**CB: # 1\_NRUDC**

**- Support NR UDC for CU-CP/UP splitting scenario are up to RAN3 in** [**R3-221673**](file:///C:\Users\liuaijuan\AppData\Local\Temp\360zip$Temp\360$0\Inbox\R3-221673.zip)

**- Introduce UDC-parameters in E1AP?**

**- Stage2 and stage3 CRs if agreeable**

**- LS reply to RAN2?**

(CATT - moderator) Summary of offline disc [R3-222390](file:///C:\Users\liuaijuan\AppData\Local\Temp\360zip$Temp\360$0\Inbox\R3-222390.zip)

The deadline for the first phase is 00:00 UTC on 25nd February (Friday)

# For the Chairman’s Notes

TBD.

# Discussion (first phase)

## Whether to support UDC in NR CP/UP separation scenario?

In LS from RAN2, RAN2 ask RAN3 to make decision on whether UDC should be supported or not in CP/UP separation scenario.

All the companies that submit contributions on this topic [1][5][7] propose to support UDC in CP/UP separation scenario. Also, from the perspective of moderator, normally,RAN3 would always consider how to support a new feature in both aggregated scenario and disaggregated scenario. So, the following is proposed:

**Proposal1: Support UDC in NR CP/UP separation scenario**

**Question: Companies are invited to provide views on whether the above proposal is agreeable or not**

| Company | Agree or not |
| --- | --- |
| CATT | Agree |
| Huawei | Agree.  We understand that in addition to the gNB CP/UP split case, the ng-eNB CP/UP split case need to support the UDC in case of NG-ENDC, based on the RAN2 agreement below.  P5: Support NR UDC for MR-DC and split bearer type, with the following restrictions  - Only include NR-DC, NGEN-DC, and NE-DC (i.e., EN-DC is not supported) |
| ZTE | Agree |
| Nokia | Agree |
| China telecom | Agree with Huawei.  Ng-eNB also support E1 interface. So this proposal shall be revised to “support UDC in CP/UP split architecture for NG-RAN ”. |
| Qualcomm | Agree |

## Stage 3 impact

### 3.2.1 Structure of the new introduced IE on UDC

In the LS from RAN2, the parameters which are needed to be transferred from CP to UP are listed as below:

* ***bufferSize***: indicates the buffer size applied for UDC as will be specified in TS 38.331, value range is {2kbytes, 4kbytes, 8kbytes}, and one spare value is reserved.
* ***dictionary***: the type is ENUMERATED {sip-SDP, operator}. It indicates which pre-defined dictionary is used for UDC as will be specified in TS 38.323 and 38.331. The value *sip-SDP* means that UE shall prefill the buffer with standard dictionary for SIP and SDP, and the value *operator* means that UE shall prefill the buffer with operator-defined dictionary.

***drb-ContinueUDC***: the type is ENUMERATED {true} as will be specified in TS 38.331. It indicates whether the PDCP entity continues or resets the uplink data compression protocol during PDCP re-establishment. The field is configured only in case of resuming an RRC connection or reconfiguration with sync, where the PDCP termination point is not changed and the fullConfig is not indicated.

And in RAN2, the the new IE introduced in 38.331 i.e. UplinkDataCompression IE is defined as a CHOICE type as below:

newSetup SEQUENCE {

bufferSize-r17 ENUMERATED {kbyte2, kbyte4, kbyte8, spare1},

dictionary-r17 ENUMERATED {sip-SDP, operator} OPTIONAL, -- Need N

}

drb-ContinueUDC-r17 ENUMERATED { true } OPTIONAL -- Need N

}

In [3],it is proposed to use the choice structure which is similar with 38.331 since the NG-RAN node either setup the new UDC configuration or continue the existing UDC configuration. In [8], it is propose to use sequence structure which include BufferSize-r17 IE, dictionary-r17 IE and drb-ContinueUDC-r17 IE.

Question: Companies are invited to provide views on which option i.e. Choice structure or Sequence structure is preferred and whether both of the options are acceptable.

| Company | Which option is preferred | Whether both of the options are acceptable |
| --- | --- | --- |
| CATT | Choice structure. Because it is more aligned with the characteristic of this feature and the design in Uu interface | Yes. Both options could work and are acceptable |
| Huawei | No strong view.  Just note that the ROHC Parameters IE over E1AP uses the sequence structure while in RRC specification, it has the choice structure. So the UDC parameters IE can simply follow the ROHC over E1. | Yes |
| ZTE | We prefer choice structure. | Yes |
| Nokia | Slight preference for Sequence structure. | Both are acceptable. |
| China telecom | We prefer Choice Structure |  |
| Qualcomm | Slightly prefer sequence. | Yes |

### 3.2.2 Support of UDC in LTE CP/UP separation

In [5][8],it is further analysed that UDC should be supported in LTE CP/UP separation scenario as well since LTE CP/UP is also introduced in Rel-17.

Question: Companies are invited to provide views on whether it should be stated in the stage 3 CR that UDC is supported in LTE CP/UP separation scenario as well.

| Company | Whether UDC should be supported in LTE CP/UP separation or not? |
| --- | --- |
| CATT | Yes. |
| Huawei | Yes |
| ZTE | Yes. |
| Nokia | Yes. Also clarification in semantics for this purpose as in R3-222134 can be included. |
| China Telecom | yes |
| Qualcomm | Yes |

## 3.3 Stage 2 impact

### 3.3.1 Stage 2 CR for 38.460

In [2][9],stage 2 CR are provided to add description on support of UDC feature in E1AP in 38.460 as follows:

*This function is used for the gNB-CU-CP to send the uplink data compression parameters to the gNB-CU-UP for certain data radio bearer(s).*

Question: Companies are invited to provide views on whether the stage 2 change on 38.460 is OK or not.

| Company | Is the stage 2 change on 38.460 |
| --- | --- |
| CATT | Yes. |
| Huawei | Yes |
| ZTE | Yes. |
| Nokia | Yes |
| Qualcomm | Yes |

### 3.3.2 Stage 2 CR for 38.401

In [4], following description on support of UDC function for CP/UP split scenario is introduced in 38.401.

*7.X UL data compression*

*NG-RAN supports UL data compression functionality as specified in TS 38.300 [2].*

*In case of split gNB architecture, the gNB-CU-CP sends the parameters for uplink data compression for certain DRB to the gNB-CU-UP. The gNB-CU-UP supports decompression of uplink PDCP SDUs*.

Question: Companies are invited to provide views on whether the stage 2 change on 38.401 is OK or not.

| Company | Is the stage 2 change on 38.401 |
| --- | --- |
| CATT | Yes. |
| Huawei | No essential need, since the EHC parameters are not specified either. |
| ZTE | Yes. We think a stage 2 description for 38.401 is needed, if we support NR UDC in split architecture. |
| Nokia | Not needed. |
| China Telecom | UDC is new feature for both RRC and user plane…  So it is need to add UDC function in 401 |
| Qualcomm | No strong opinion. Either is fine |

## 3.4 Reply LS to RAN2

In [6][10],the reply LS is provided. Since how to reply to RAN2 depends on the conclusion of above questions, the discussion on the reply LS to RAN2 would be taken after the completion of first round of discussion.

# Discussion (Second phase)

# Conclusion, recommendations [if needed]

# Reference

[1] R3-221999 Discussion on support of UDC in CPUP separation scenario CATT,ZTE

[2] R3-222000 (CR for 38 460)Support of UDC in E1 CATT,ZTE

[3] R3-222001 (CR for 38 463)Support of UDC in E1 Ericsson.

[4] R3-222334 Support of UDC in NR ZTE,CATT

[5] R3-222335 Discussion on support for NR UDC ZTE

[6] R3-222002 [Draft]Reply LS on introduction of NR UDC CATT ZTE

[7] [R3-222133](D:\\会议硬盘\\TSGR3_115-e\\Docs\\R3-222133.zip) UDC for CU-CP/UP splitting scenario Huawei

[8] [R3-222134](D:\\会议硬盘\\TSGR3_115-e\\Docs\\R3-222133.zip) UDC for CU-CP/UP splitting scenario Huawei

[9] [R3-222135](file:///D:\会议硬盘\TSGR3_115-e\Docs\R3-222133.zip) UDC for CU-CP/UP splitting scenario Huawei

[10] [R3-222136](file:///D:\会议硬盘\TSGR3_115-e\Docs\R3-222133.zip) [DRAFT] Reply LS on UDC for CU-CP/UP splitting scenario Huawei