3GPP TSG-RAN WG3 Meeting #115-e R3-222949

**21 Feb - 3 Mar 2022**

**Online**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.470** | **CR** | **0078** | **rev** | **4** | **Current version:** | **16.5.0** |  |
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| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <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:***  | BL CR to 38.470 Support for Redcap UEs |
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| ***Source to WG:*** | ZTE, Nokia, Nokia Shanghai Bell, Ericsson, Samsung, CATT, Qualcomm Incorporated, Radisys, Reliance JIO |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_redcap-Core |  | ***Date:*** | 2022-03-04 |
|  |  |  |  |  |
| ***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 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:*** | The work item RP-211574 was agreed to support NR RedCap UEs. |
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| ***Summary of change:*** | RAN3#114-e:Introduce the text description of the RedCap UE Indication signalled in the RRC message transfer function over F1.RAN3#114-bis-e:Introduce the text description of the RedCap access information signalled in the F1 interface management function over F1.RAN3#115-e:Add the description in the Abbreviation section that RedCap stands for “Reduced Capability”.Introduce the text description of the NR eDRX information signalled in the Paging function over F1. |
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| ***Consequences if not approved:*** | The function of RedCap cannot be supported in Rel-17. |
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| ***Clauses affected:*** | 3.3; 5.2.1; 5.2.4; 5.2.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.300TS 38.401 CR 0191TS 38.413 CR 0664TS 38.423 CR 0716TS 38.473 CR 0806 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev0: R3-216121 agreed in RAN3#114-e.Rev1: Update the cover sheet, add Nokia, Ericsson, Samsung, CATT and Qualcomm as co-signers, correct the typo issue. Resubmission to RAN3#114-bis-e.Rev2: Changes introduced in RAN3#114bis-e: Capture the agreed TP in R3-221377, add Radisys and Reliance JIO as co-signers. Resubmission to RAN3#115-e.Rev3: Add the abbreviation for “RedCap”.Rev4: Changes introduced in RAN3#115-e: Capture the agreed TP in R3-222486. |

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## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP 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 3GPP TR 21.905 [1].

BH Backhaul

DRB Data Radio Bearers

eDRX extended Discontinuous Reception

F1-U F1 User plane interface

F1-C F1 Control plane interface

F1AP F1 Application Protocol

GTP-U GPRS Tunnelling Protocol

IAB Integrated Access and Backhaul

IP Internet Protocol

NR-MIB NR-Master Information Block

O&M Operation and Maintenance

PA Paging Area

PF Paging Frame

PH Paging Hyperframes

PO Paging Occasion

QoS Quality of Service

RedCap Reduced Capability

RIM Remote Interference Management

RLC Radio Link Control

RRC Radio Resource Control

SCTP Stream Control Transmission Protocol

SRB Signalling Radio Bearers

SIB1 System Information Block 1

SIB10 System Information Block 10

SIB12 System Information Block 12

SIB13 System Information Block 13

SIB14 System Information Block 14

SL Sidelink

TNL Transport Network Layer

V2X Vehicle-to-Everything

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### 5.2.1 F1 interface management function

The error indication function is used by the gNB-DU or gNB-CU to indicate to the gNB-CU or gNB-DU that an error has occurred.

The reset function is used to initialize the peer entity after node setup and after a failure event occurred. This procedure can be used by both the gNB-DU and the gNB-CU.

The F1 setup function allows to exchange application level data needed for the gNB-DU and gNB-CU to interoperate correctly on the F1 interface, and exchange the intended TDD DL-UL configuration originating from the gNB-DU or destined to the gNB-DU. The F1 setup is initiated by the gNB-DU.

The gNB-CU Configuration Update and gNB-DU Configuration Update functions allow to update application level configuration data needed between gNB-CU and gNB-DU to interoperate correctly over the F1 interface, and may activate or deactivate cells. For cross-link interference mitigation, the gNB-CU may coordinate the exchange of intended TDD DL-UL configuration by merging, forwarding and selective forwarding of intended TDD DL-UL configuration(s) between its gNB-DUs, or between its gNB-DUs and other gNBs, gNB-CUs. With the gNB-CU Configuration Update function, energy saving with cell activation/deactivation can be supported as defined in TS 38.300 [8].

The F1 setup and gNB-DU Configuration Update functions allow to inform the S-NSSAI(s), CAG ID(s) and NID(s) supported by the gNB-DU.

The F1 setup and gNB-DU Configuration Update functions allow to provide information on RedCap access configuration at the gNB-DU.

The F1 setup and gNB-CU Configuration Update functions allow to inform the NID(s) available at the gNB-CU.

The F1 resource coordination function is used to transfer information about frequency resource sharing between gNB-CU and gNB-DU. In case of split gNB architecture, the gNB-CU may consolidate the outgoing messages from multiple gNB-DUs and distribute the incoming messages to the involved gNB-DUs, to perform resource coordination.

The gNB-DU status indication function allows the gNB-DU to indicate overload status to gNB-CU.

The network access rate reduction function is used to indicate to the gNB-DU that the rate at which UEs are accessing the network need to be reduced.

The F1 removal function is used to remove the interface instance and all related resources between the gNB-DU and the gNB-CU in a controlled manner.

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### 5.2.4 RRC message transfer function

This function allows to transfer RRC messages between gNB-CU and gNB-DU. RRC messages are transferred over F1-C. The gNB-CU is responsible for the encoding of the dedicated RRC message with assistance information provided by gNB-DU. This function also allows gNB-DU to report to gNB- CU if the downlink RRC message has been successfully delivered to UE or not. The function also allows the gNB-DU to report to the gNB-CU if the accessing UE is a Reduced Capability UE as defined in TS 38.300 [8].

For IAB-nodes, this function allows to transfer RRC messages for setting up and configuring the IAB-MT side of the BH RLC channel. These RRC messages are carried on F1-C between the IAB-donor-CU and the parent IAB-DU i.e. the gNB-DU side of the BH RLC channel.

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### 5.2.5 Paging function

The gNB-DU is responsible for transmitting the paging information according to the scheduling parameters provided.

The gNB-CU provides paging information to enable the gNB-DU to calculate the exact PH, if the eDRX is configured, PO and PF. The gNB-CU determines the PA. The gNB-DU consolidates all the paging records for a particular PH, PO, PF and PA, and encodes the final RRC message and broadcasts the paging message on the respective PH, PO, PF in the PA.

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