**3GPP TSG-RAN WG2 Meeting #130 *R2-2504615***

**St Julian’s, Malta, 19 – 23 May 2025**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.300** | **CR** | **0994** | **rev** | **1** | **Current version:** | **18.5.0** |  |
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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 | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Correction on NCR-Fwd functionality | | | | | | | | | |
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| ***Source to WG:*** | Samsung, Nokia (Rapporteur), ...? | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_netcon\_repeater-Core | | | | |  | ***Date:*** | | | 2025-05-19 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | In the current version of TS 38.300 (18.5.0), NCR-Fwd is defined in the following way:  **NCR-Fwd**: Network-Controlled Repeater node function, which performs amplifying-and-forwarding of UL/DL RF signals between gNB and UE. The behaviour of the NCR-Fwd is controlled according to the side control information received by the NCR-MT from a gNB.  This is in our view an accurate definition, and has two important aspects: 1) NCR-Fwd is the NCR entity/part/function which performs the amplify-and-forward function, and 2) it performs this function under control of the network, via side control information received by the NCR-MT.  However, later on in Clause 4.9.3, the following statement is made:  RRC signalling is utilized to configure the NCR-MT to receive side control information from a gNB, which is used by the NCR-Fwd to determine whether and how to amplify-and-forward RF signals.  As per the NCR-Fwd definition, and related agreements, NCR-Fwd does not determine whether and how (the ‘whether’ bit being especially problematic) to amplify-and-forward. It is the network that decides whether (i.e. ON/OFF) and how (e.g. beam configuration) the data is relayed. An entity within NCR may indeed process and implement such decisions from the network, but 3GPP did not specify NCR operation to that level (e.g. whether it is the NCR-MT, NCR-Fwd, a combination of both, or a third, implementation-based entity that processes commands from the network). | | | | | | | | |
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| ***Summary of change:*** | | Delete the inacurrate part of the statement, and make it clear the side control information is used to control NCR-Fwd operation (as per its definition):  RRC signalling is utilized to configure the NCR-MT to receive side control information from a gNB, which is used to control the amplify-and-forward function of the NCR-Fwd ~~to determine whether and how~~.  **Impact Analysis**  **Impacted 5G architecture options**: NR SA  **Impacted functionality**: NCR operation  **Inter-operability**:  1. If the network is implemented according to the CR and the NCR-MT is not, the operation of NCR is ill-defined (as the implication of the TS is that the NCR-Fwd plays a part in deciding whether to forward the cell, and how).  2. If the NCR-MT is implemented according to the CR and the network is not, there is no inter-operability issue. | | | | | | | | |
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| ***Consequences if not approved:*** | | If the CR is not approved, it is quite possible that conclusions can be drawn on function of NCR-Fwd which are incorrect, leading to implications that NCR functioning is more autonomous than agreed (but without specifying to what degree or how, further increasing the confusion). | | | | | | | | |
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| ***Clauses affected:*** | | 4.9.3 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

*START OF CHANGES*

### 4.9.3 Signalling procedures

RRC signalling is utilized to configure the NCR-MT to receive side control information from a gNB, which is used to control the amplify-and-forward function of the NCR-Fwd. If the side control configuration is removed, the NCR-Fwd ceases its amplifying-and-forwarding function.

MAC CE indications can be used to configure the backhaul link and the access link of the NCR-Fwd as specified in TS 38.321 [6].

When the NCR-MT is in RRC\_CONNECTED state, the NCR-Fwd may amplify-and-forward RF signals based on the side control information received from the gNB. The NCR-MT does not support RRM measurements in RRC\_CONNECTED.

When the NCR-MT transitions from RRC\_CONNECTED state to RRC\_INACTIVE state, the NCR-Fwd may continue to amplify-and-forward RF signals in accordance with the last side control information received from the gNB. When the NCR-MT is in RRC\_INACTIVE state, the NCR-Fwd ceases to amplify-and-forward RF signals if no suitable cell is detected, or if the NCR-MT selects a different cell than the last serving cell on which side control configuration was received.

When an NCR-MT in RRC\_INACTIVE state determines degradation of the NCR-Fwd backhaul link beam, then the NCR-Fwd should cease amplifying-and-forwarding RF signals, and the NCR-MT should attempt to resume its RRC connection (with cause value *mo-Signalling*). The criteria to evaluate backhaul beam degradation are left to the NCR-node implementation.

When the NCR-MT transitions from RRC\_CONNECTED state to RRC\_IDLE, the NCR-Fwd ceases any amplifying-and-forwarding of RF signals. How an NCR-MT transitions back from RRC\_IDLE state to RRC\_CONNECTED state is left to NCR-node or network implementation.

An NCR-MT can detect RLF on the control link as specified in TS 38.331 clause 5.3.10 [12]. When RLF is detected, the NCR-MT performs the RRC re-establishment procedure as specified in TS 38.331 [12]. During the RRC re-establishment procedure, the NCR-Fwd ceases to amplify-and-forward RF signals.

After successfully performing the RRC re-establishment procedure, the NCR-MT waits for the new side control configuration for the NCR-Fwd to resume the amplifying-and-forwarding of RF signals.

An NCR-MT can also perform Beam Failure Detection (BFD) and Beam Failure Recovery (BFR) as described in clause 9.2.8. Once the NCR-MT detects beam failure in the control link, the NCR-Fwd should cease amplifying-and-forwarding RF signals until BFR is completed.

*END OF CHANGES*