**3GPP TSG-RAN WG3 Meeting #123bisR3-242155**

**Changsha, China, 15th – 19th April, 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0372** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Corrections for SL Relay N3C related description | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | NEC, LG Electronics, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_SL\_relay\_enh-Core | | | | |  | ***Date:*** | | | 2024-04-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | |  |
|  | *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)* ***S*** *(adding to the sourcing companies’ CR statistics)*  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) Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For both inter-DU and intra-DU indirect path addition on top of direct path, no matter the link is PC5 link or N3C link, MP remote UE should perform Uu measurement and report. However, according to current description, only MP remote UE using PC5 link needs to perform Uu measurement and report, which is not correct. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. In section 8.22.2, move “If the MP Remote UE is connected with the MP Relay UE using PC5 link,” to the beginning of the second sentence, add “or” in the sentence “the Uu measurement configuration and measurement report signalling are performed between MP Remote UE and the gNB-CU to evaluate relay link measurement and Uu link measurement.” 2. In section 8.22.4, move “If the MP Remote UE is connected with the MP Relay UE using PC5 link,” to the beginning of the second sentence, add “or” in the sentence “the Uu measurement configuration and measurement report signalling are performed between MP Remote UE and the gNB-CU to evaluate relay link measurement and Uu link measurement.” | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | N3C MP Remote UE would not perform Uu link measurement, and fail the indirect path addition on top of direct path. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.22.2, 8.22.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<<<<<< START OF CHANGE >>>>>>**

# 8 Overall procedures in gNB-CU/gNB-DU Architecture

## 8.22 Overall procedures for multi-path support

### 8.22.2 Inter-DU indirect path addition on top of direct path

The signalling flow for inter-DU indirect path addition is shown in Figure 8.22.2-1.



Figure 8.22.2-1 Signalling procedure of inter-DU indirect path addition on top of direct path

1. The Uu measurement configuration and measurement report signalling are performed between MP Remote UE and the gNB-CU to evaluate relay link measurement and/or Uu link measurement. If the MP Remote UE is connected with the MP Relay UE using PC5 link, the MP Remote UE may report Uu measurement results of neighboring cells and a list of MP Relay UE L2 ID and cell ID of one or multiple candidate MP Relay UE(s).

In case that the MP Remote UE is connected with the MP Relay UE using N3C link and the MP Relay UE is in RRC\_CONNECTED state, the MP Remote UE reports at least the list of the C-RNTI and the cell ID of one or multiple candidate MP Relay UE(s).

2. The gNB-CU decides to add the indirect path via MP Relay UE to MP Remote UE under a different gNB-DU (i.e., gNB-DU2).

NOTE 1: Mode 1 resource configuration cannot be configured for MP Remote UE in inter-gNB-DU multi-path relay in this release.

3. The reconfiguration to MP Relay UE is performed among MP Relay UE, the gNB-DU2 and the gNB-CU if MP Relay UE is in RRC\_CONNECTED state. The gNB-CU sends an *RRCReconfiguration* message to the MP Relay UE. If the MP Relay UE is in RRC\_IDLE/INACTIVE state, this step is skipped and the configuration to the target MP Relay UE is performed in Step 9/9a.

4. The gNB-CU sends the UE CONTEXT SETUP REQUEST message for the MP Remote UE to the gNB-DU2, which contains the indirect path addition configuration at least.

5. The gNB-DU2 responds to the gNB-CU with a UE CONTEXT SETUP RESPONSE message.

5a. The gNB-CU may send an UE CONTEXT MODIFICATION REQUEST message to the gNB-DU1 to query the latest configuration if the configuration of the MP Remote UE on the direct path is updated.

5b. The gNB-DU1 responds with an UE CONTEXT MODIFICATION RESPONSE message that includes the configuration information.

6. The gNB-CU sends the DL RRC MESSAGE TRANSFER message for MP Remote UE by including the *RRCReconfiguration* message to gNB-DU1. If the MP Remote UE is connected with the MP Relay UE using the PC5 link, the contents in the *RRCReconfiguration* message may include at least indirect path addition configuration, PC5 Relay RLC channel configuration for relay traffic, bearer mapping and the associated radio bearer(s). If the MP Remote UE is using N3C link, the contents in the *RRCReconfiguration* message may include at least indirect path addition configuration, bearer mapping and the associated radio bearer(s).

7. The gNB-DU1 sends the *RRCReconfiguration* message to the MP Remote UE.

8. If the MP Remote UE is using the PC5 link, the MP Remote UE establishes PC5 connection with the target MP Relay UE.

If the MP Remote UE is connected with the MP Relay UE using N3C link, this step is skipped.

9. The MP Remote UE sends the *RRCReconfigurationComplete* message to the gNB-DU1 via direct path in order to complete the indirect path addition procedure.

9a. In case the SRB1 with duplication is configured, the MP Remote UE also sends the *RRCReconfigurationComplete* message to the gNB-DU2 via indirect path.

NOTE 2: In the case that the target MP Relay UE for indirect path addition is in RRC\_IDLE/INACTIVE state, how the MP Remote UE triggers the MP Relay UE to be in RRC\_CONNECTED state is specified in TS 38.300 [2].

10. The gNB-DU1 sends the UL RRC MESSAGE TRANSFER message to gNB-CU by including the *RRCReconfigurationComplete* message received in step 9.

10a. In case the SRB1 with duplication is configured, the gNB-DU2 also sends the UL RRC MESSAGE TRANSFER message to gNB-CU by including the *RRCReconfigurationComplete* message received in step 9a.

11. The MP Remote UE performs data transmission and reception by using both the direct path and the indirect path served by a MP Relay UE.

**<<<<<< NEXT CHANGE >>>>>>**

### 8.22.4 Intra-DU indirect path addition on top of direct path

The signaling flow for intra-DU indirect path addition is shown in Fig. 8.22.4-1.



Figure 8.22.4-1: Signalling procedure of intra-DU indirect path addition on top of direct path

1. The Uu measurement configuration and measurement report signalling are performed between MP Remote UE and gNB-CU to evaluate relay link measurement and/or Uu link measurement. If the MP Remote UE is connected with the MP Relay UE using PC5 link, the MP Remote UE may report Uu measurement results of neighboring cells and a list of MP Relay UE L2 ID and cell ID of one or multiple candidate MP Relay UE(s).

In case that the MP Remote UE is connected with the MP Relay UE using N3C link and the MP Relay UE is in RRC\_CONNECTED state, the MP Remote UE reports at least the list of the C-RNTI and the cell ID of one or multiple candidate MP Relay UE(s).

2. The gNB-CU decides to add the indirect path via MP Relay UE to MP Remote UE under the same gNB-DU.

3. The reconfiguration to MP Relay UE is performed among MP Relay UE, gNB-DU and gNB-CU if MP Relay UE is in RRC\_CONNECTED state. The gNB-CU sends an *RRCReconfiguration* message to the MP Relay UE. If the MP Relay UE is in RRC\_IDLE/INACTIVE state, this step is skipped and the configuration to the target MP Relay UE is performed in Step 9/9a.

4. The gNB-CU sends the UE CONTEXT MODIFICATION REQUEST message for the MP Remote UE to the gNB-DU, which contains the indirect path addition configuration at least.

5. The gNB-DU responds to the gNB-CU with a UE CONTEXT MODIFICATION RESPONSE message.

6. The gNB-CU sends the DL RRC MESSAGE TRANSFER message for MP Remote UE by including the *RRCReconfiguration* message to gNB-DU. If the MP Remote UE is connected with the MP Relay UE using the PC5 link, the contents in the *RRCReconfiguration* message may include at least indirect path addition configuration, PC5 Relay RLC channel configuration for relay traffic, bearer mapping and the associated radio bearer(s). If the MP Remote UE is using N3C link, the contents in the *RRCReconfiguration* message may include at least indirect path addition configuration, bearer mapping and the associated radio bearer(s).

7. The gNB-DU sends the *RRCReconfiguration* message to the MP Remote UE.

8. If the MP Remote UE is using the PC5 link, the MP Remote UE establishes PC5 connection with the target MP Relay UE.

If the MP Remote UE is using N3C link, this step is skipped.

9. The MP Remote UE sends the *RRCReconfigurationComplete* message to the gNB-DU via direct path to complete the indirect path addition procedure.

9a. In case the SRB1 with duplication is configured, the *RRCReconfigurationComplete* message is also sent to the gNB-DU via indirect path.

NOTE: In the case that the target MP Relay UE for indirect path addition is in RRC\_IDLE/INACTIVE state, how the MP Remote UE triggers the MP Relay UE to be in RRC\_CONNECTED state is specified in TS 38.300 [2].

10/10a. The gNB-DU sends the UL RRC MESSAGE TRANSFER message to gNB-CU by including the *RRCReconfigurationComplete* message.

11. The MP Remote UE performs data transmission and reception by using both the direct path and the indirect path served by a MP Relay UE.

**<<<<<< END OF CHANGE >>>>>>**