3GPP TSG-RAN WG3 Meeting #119 R3-23xxxx

**27th Feb – 3rd Mar 2023**

**Athens, Greece**

**Title: TP to TS 38.401 for inter-DU path addition**

**Source: ZTE**

**Agenda item: 16.4**

**Document for: Discussion and Decision**

# Introduction

As guidance in CB: # 26\_SLRelay\_MP, this document is to provide a TP to TS 38.401 for inter-DU path addition for support of multi-path.

# TP to TS 38.401

## 8.xx Overall procedures for multi-path support

### 8.xx.1 Inter-DU direct path addition on top of indirect path

The signalling flow for inter-DU direct path addition is shown in Figure 8.xx.1-1.

1. The Uu measurement configuration and measurement report signalling is performed between remote UE1 and gNB-CU to evaluate both relay link measurement and Uu link measurement. The remote UE1 may report Uu measurement results of neighboring cells and the potential candidate relay UEs.

2. The gNB-CU decides to add the direct path to remote UE1 under a different gNB-DU (i.e., gNB-DU1).

3. The gNB-CU sends the UE CONTEXT SETUP REQUEST message for the remote UE1 to the gNB-DU1, which contains at least the direct path configuration.

4. The gNB-DU1 responds to the gNB-CU with a UE CONTEXT SETUP RESPONSE message.

5. The gNB-CU sends an *RRCReconfiguration* message to the relay UE2 to update the indirect path configuration if necessary.

6. gNB-CU sends the UE CONTEXT MODIFICATION REQUEST message for remote UE1 by including the *RRCReconfiguration* message to the gNB-DU2. The contents in the *RRCReconfiguration* message may include at least direct path addition configuration, RLC channel configuration, bearer mapping and the associated radio bearer(s).

7. The gNB-DU2 sends the *RRCReconfiguration* message to the remote UE1.

8. The gNB-DU2 sends the UE CONTEXT MODIFICATION RESPONSE message to the gNB-CU.

9. The remote UE1 performs random access procedure at the gNB-DU1.

10. The remote UE1 may complete the direct path addition procedure by sending the *RRCReconfigurationComplete* message to the gNB-DU2.

FFS whether the remote UE1 sends the *RRCReconfigurationComplete* message to the gNB-CU via old path (indirect path) or new path (direct path).

11. The gNB-DU2 sends the UL RRC MESSAGE TRANSFER message to gNB-CU by including the *RRCReconfigurationComplete* message.



**Figure 8.xx.1-1: Signalling procedure of inter-DU direct path addition on top of indirect path**

### 8.xx.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.xx.2-1.

1. The Uu measurement configuration and measurement report signalling is performed between remote UE1 and gNB-CU to evaluate relay link measurement and Uu link measurement. The remote UE1 may report one or multiple candidate relay UE(s) and Uu measurement results after it measures/discovers the candidate relay UE(s).

2. The gNB-CU decides to add the indirect path via relay UE2 to remote UE1 under a different gNB-DU (i.e., gNB-DU2).

3. The reconfiguration to relay UE2 is performed among relay UE2, gNB-DU2 and gNB-CU if relay UE2 is in RRC\_CONNECTED state. The gNB-CU sends an *RRCReconfiguration* message to the relay UE2. If the relay UE2 is in RRC\_IDLE/INACTIVE state, this step is skipped and the configuration to the relay UE2 is performed in Step 9.

4. The gNB-CU sends the UE CONTEXT SETUP REQUEST message for the remote UE1 to the gNB-DU2, which contains the indirect path configuration at least.

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

6. gNB-CU sends the DL RRC MESSAGE TRANSFER message for remote UE1 by including the *RRCReconfiguration* message to gNB-DU1. The contents in the *RRCReconfiguration* message may include at least indirect path addition configuration, PC5 RLC channel configuration for relay traffic, bearer mapping and the associated radio bearer(s).

7. gNB-DU1 sends the *RRCReconfiguration* message to the remote UE1.

8. The remote UE1 establishes PC5 connection with relay UE2. In case the relay UE2 is in RRC\_IDLE/INACTIVE state, the PC5 connection establishment may trigger RRC setup/resume procedure for the relay UE2 to enter RRC\_CONNECTED state.

9. The remote UE1 may complete the indirect path addition procedure by sending the *RRCReconfigurationComplete* message to the gNB-DU1.

FFS whether the remote UE1 sends the *RRCReconfigurationComplete* message to the gNB-CU via old path (direct path) or new path (indirect path).

FFS: In case the U2N relay UE is in RRC\_IDLE/ INACTIVE state, how to trigger the U2N relay UE enter RRC\_CONNECTED state, RAN3 wait for RAN2’s further progress.

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

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**Figure 8.xx.2-1 Signalling procedure of inter-DU indirect path addition on top of direct path**