3GPP TSG-RAN WG3 Meeting #127bis R3-252359

Wuhan, China, 7th – 11st April 2025

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.401** | **CR** |  | **rev** |  | **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 |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Clarification on Security indication during State Transition from RRC\_INACTIVE to RRC\_CONNECTED  |
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| ***Source to WG:*** | China Telecom, Nokia, Huawei, LG Electronics, Lenovo, ZTE, CATT |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_CPUP\_Split-Core, TEI18 |  | ***Date:*** | 2025-04-07 |
|  |  |  |  |  |
| ***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 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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | Per TS 33.501, during the context relocation procedure for the RRC inactive UE, the UP security activation status with the corresponding PDU session ID(s) shall be sent to the target gNB/eg-eNB via Xn-AP Retrieve UE Context Response message. And the target RAN node would use the UP security activation status when resuming the RRC connection as specified below. * *If the UP security activation status can be supported in the target gNB/ng-eNB, the target gNB/ng-eNB shall use the UP security activations that the UE used at the last source cell. Otherwise, the target gNB/ng-eNB shall respond with an RRC Setup message to establish a new RRC connection with the UE.*

For the CU-CP/CU-UP split architecture, when the UP security policy is set to "preferred," the CU-UP can determine whether to activate UP security based on its local strategy. In order to align with the UP security activation status that the UE used at the last serving cell, the CU-CP may change the security indication and send it to the CU-UP if the UP security policy retrieved from the old NG-RAN node is "preferred".  |
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| ***Summary of change:*** | * To add a NOTE in clause 8.6.2 to clarify that the security indication may be changed and sent to the CU-UP if the UP security policy retrieved from the old NG-RAN node is "preferred".

Impact Analysis:Impact assessment towards the previous version of the specification (same release):This CR has an isolated impact towards the previous version of the specification (same release).  |
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| ***Consequences if not approved:*** | The new serving gNB-CU-UP is not aware of the security activation status used in last serving cell, and RRC setup may occur between the UE and the new serving gNB-CU-CP. |
|  ***and*** |  |
| ***Clauses affected:*** | 8.6.2 |
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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:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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### 8.6.2 RRC inactive to other states

This clause gives the RRC inactive to other RRC states transition given that gNB consists of gNB-CU and gNB-DU(s), as shown in Figure 8.6.2-1.



Figure 8.6.2-1: RRC inactive to other RRC states transition procedure

1. If data is received from 5GC, the gNB-CU sends PAGING message to the gNB-Dre

2. The gNB-DU sends *Paging* message to UE.

NOTE 1: Step 1 and 2 only exist in case of DL data arrival.

3. The UE sends *RRCResumeRequest* message either upon RAN-based paging, UL data arrival or RNA update.

4. The gNB-DU includes *RRCResumeRequest* in a non-UE associated INITIAL UL RRC MESSAGE TRANSFER message and transfer to the gNB-CU.

5. For UE Inactive to UE Active transitions, excluding transitions due to signalling exchange only, the gNB-CU allocates gNB-CU UE F1AP ID and sends UE CONTEXT SETUP REQUEST message to gNB-DU, which may include SRB ID(s) and DRB ID(s) to be setup, CellGroupConfig stored in gNB-CU or retrieved from the old NG-RAN node may also be included. In case of NG-RAN sharing, the gNB-CU includes the serving PLMN ID (in case of SNPNs the serving NID).

NOTE 2: In case of CP/UP split architecture, the gNB-CU-CP may change the security indication of a PDU session and send it to the gNB-CU-UP if the user plane security policy retrieved from the old NG-RAN node is "preferred", to align the user plane security activation status that the UE used at the last serving cell.

6. The gNB-DU responds with UE CONTEXT SETUP RESPONSE message, which contains RLC/MAC/PHY configuration of SRB and DRBs provided by the gNB-DU.

NOTE 3: Step 5 and step 6 exist for inactive to active transitions, excluding transitions due to signalling exchange only. When gNB-CU successfully retrieves and verifies the UE context, it may decide to let the UE enter into RRC active mode. gNB-CU shall trigger UE context setup procedure between gNB-CU and gNB-DU, during which both SRB1, SRB2 and DRB(s) can be setup. For signalling exchange only transitions, gNB-CU does not trigger UE Context Setup procedure. For inactive to Idle transitions the gNB-CU does not trigger the UE Context Setup procedure.

7. The gNB-CU generates *RRCResume/RRCSetup*/*RRCReject*/*RRCRelease* message or receives *RRCRelease* message from the old NG-RAN node towards the UE. The RRC message is encapsulated in DL RRC MESSAGE TRANSFER message together with SRB ID.

8. The gNB-DU forwards RRC message to the UE either over SRB0 or SRB1 as indicated by the SRB ID.

NOTE 4: In step 7, it is expected that gNB-CU takes appropriate action, e.g. generates RRC resume message for inactive to active state transition(for both cases of signaling exchange only, and UP data exchange), generates *RRCSetup* message for fallback to establish a new RRC connection, and generates or receives from the old NG-RAN node either *RRCRelease* message without suspend configuration for inactive to idle state transition, or *RRCRelease* message with suspend configuration to remain in inactive state.
If step 5 and 6 are not performed, the gNB-DU deduces the SRB on which to deliver the RRC message in step 7 from the SRB ID, i.e. SRB ID “0” corresponds to SRB0, SRB ID “1” corresponds to SRB1.

9. The UE sends *RRCResumeComplete*/*RRCSetupComplete* message to the gNB-DU.

10. The gNB-DU encapsulates RRC in UL RRC MESSAGE TRANSFER message and send to the gNB-CU.

NOTE 5: Step 9 and step 10 exist for inactive to active state transition (for both cases of signaling exchange only, and UP data exchange). UE generates *RRCResumeComplete*/*RRCSetupComplete* message for resume the existing RRC connection or fallback to a new RRC connection respectively.

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