**3GPP TSG-RAN WG2 Meeting #126 *R2-xxxxxx***

**Fukuoka, Japan, 20 – 24 May 2024 *R2-*2404555**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.300** | **CR** | **0799** | **rev** | **3** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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 | **x** | Radio Access Network | **x** | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | RACH-less support generalization [RACH-lessHO] | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_mobile\_IAB-Core,  NR\_NTN\_enh-Core,  TEI18 | | | | |  | ***Date:*** | | | 2024-04-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As the RACHless is generalized it is better to have generic section for RACHless mobility   1. Provide general description for generic mobility about rach-less handover. As a baseline corresponding IAB RACH-less description in 4.7.5.2 is used | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Add new section under 9.2.3 about RACH-less handover and remove then duplicate for mIAB RACH-less section as well as NTN in 16.4.1.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage-2 would not be aligned with Stage-3 and causes confusion | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.7.5.2, 9.2.3.x, 16.14.3.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*First Modified Subclause*

### 4.7.5 Mobile IAB

#### 4.7.5.1 General

*Mobile IAB* introduces the *mobile IAB-node*, which is a RAN node that provides NR access links to UEs and an NR backhaul link to a parent node, and that can conduct physical mobility across the RAN area. The mobile IAB-node includes a *mobile IAB-MT* and a *mobile IAB-DU*. Mobile IAB supports the same functionality as IAB unless explicitly specified. The following enhancements/restrictions *only* apply to mobile IAB:

- The mobile IAB-node uses the mobile IAB-node authorization procedure defined in TS 38.401 [4] and the MBSR authorization procedure defined in TS 23.501 [3].

- A RAN node operating as a mobile IAB-node shall not concurrently operate as an IAB-node. During network integration, the RAN node shall indicate whether it intends to operate as a mobile IAB-node or as an IAB-node via an indicator in the *RRCSetupComplete* message.

- The parent node indicates support for mobile IAB-nodes by broadcasting a mobile-IAB-specific indicator in SIB1.

- The mobile IAB-node shall not have descendent nodes. A mobile-IAB cell shall therefore not broadcast any indication that it is a suitable parent node for IAB-nodes or mobile IAB-nodes.

- The cell of a mobile IAB-DU may indicate to UEs via a SIB1 indicator that it is a mobile-IAB cell.

- The mobile IAB-node uses the mobile IAB-node network integration procedure as defined in TS 38.401 [4].

- The mobile IAB-MT can perform the mobile IAB-MT migration procedures via Xn handover and/or via NG handover as defined in TS 38.401 [4]. The mobile IAB-MT can also perform the mobile IAB-node recovery procedure as defined in TS 38.401 [4].

- The mobile IAB-node can perform the mobile IAB-DU migration procedure, where a new logical mobile IAB-DU is established on the mobile IAB-node and the initial logical mobile IAB-DU is released some time later. During this procedure, the UEs connected via the mobile IAB-node are handed over from the initial logical mobile IAB-DU, referred to as the source logical mobile IAB-DU, to the new logical mobile IAB-DU, referred to as the target logical mobile IAB-DU. The details of this procedure are defined in TS 38.401 [4]. Enhancements related to BAP for mobile IAB-DU migration are defined in TS 38.340 [31].

- When a RAN node is operating as a mobile IAB node, dual connectivity for this node is not supported.

RACH-less handover as specified in 9.2.3.x, TS 38.321 [6] and TS 38.331 [12] is supported in mobile IAB.

*Next Modified Subclause*

### 9.2.3 Mobility in RRC\_CONNECTED

#### 9.2.3.x RACH-less handover

During intra-gNB HO procedure, RACH-less handover can be configured for a UE. RACH-less handover can also be used during the mobile IAB-DU migration procedure for a UE that is migrated from the source logical mobile IAB-DU to the target logical mobile IAB-DU. The RACH-less handover procedure applies the following functionality:

- The UE uses the same timing advance at the target cell as in the source cell or timing advance of “0”.

- The handover command for the UE contains a beam identifier for the beam to be used by the UE at the target cell. The beam may be determined based on a UE measurement report and/or left up to gNB implementation, e.g., using the target cell’s knowledge about the beam(s) used by the UE at the co-located source cell.

- The beam can be estimated through the early TA acquisition procedure.

- The handover command may include a pre-allocated UL grant. Alternatively, an UL grant is dynamically signalled by the target cell.

- The UE transmits the *RRCReconfigurationComplete* message using the pre-allocated or dynamically signalled UL grant. The UE’s successful UL data reception on the target cell terminates the RACH-less handover execution.

*Next Modified Subclause*

16.14.3.2 Mobility in RRC\_CONNECTED

16.14.3.2.1 Handover

The same principle as described in 9.2.3.2 applies unless hereunder specified:

During mobility between NTN and Terrestrial Network (TN), a UE is not required to connect to both NTN and TN at the same time.

NOTE: NTN TN handover refers to mobility in both directions, i.e. from NTN to TN (hand-in) and from TN to NTN (hand-out).

DAPS handover is not supported for NTN in this release of the specification.

UE may support mobility between gNBs operating with NTN payloads in different orbits (e.g., GSO, NGSO at different altitudes).

RACH-less handover as specified in 9.2.3.x, TS 38.321 [6] and TS 38.331 [12] is supported in NTNs.

*End of Changes*