**3GPP TSG-WG SA2 Meeting #164S2-240xxxx**

**Maastricht, NL, 19th Aug – 23rd Aug, 2024 (revision of S2-240xxxx)**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **XXXX** | **rev** | **-** | **Current version:** | **19.0.0** |  |
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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 | **X** |

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| ***Title:***  | On the Mobility of the MWAB |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | VMR\_Ph2 |  | ***Date:*** | 2024-08-09 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *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:*** | As the work item VMR\_Ph2 was approved in SP#104 meeting therefore it is the time to introduce the features to the related specifications.  On the mobility aspects, the followings aspects were discussed and reflected in the conclusion clause: 1. No impact to the UE: No UE impact should be expected to support mobility involving a MWAB. 2. Connect to different PLMNs: MWAB-gNB and MWAB-UE may connect to different PLMNs. 3. UPF and/or AMF might be changed: Upon mobility, the UPF and/or AMF used for BH connections of the MWAB-UE may change. 4. Information broadcasted by the gNB: The TAC, gNB ID and/or cell ID advertised by the MWAB-gNB may change.5. on the configuration: The TAC/Cell ID/gNB ID/AMF ID used by the MWAB-gNB cell(s) can be reconfigured by the OAM server 6. UE move to or leave from MWAB or between MWAB: Existing mechanism can be reused.7. UE move together with MWAB: Use handover or MRU, but need to wait for RAN’s feedback. 8. on BH PDU Session: The MWAB-gNB updates the TNL association of the N2 interface and N3 interfaces by using the new IP addresses of the new BH PDU sessions after the new BH PDU sessions are established. |
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| ***Summary of change:*** | Adding new clauses to support for Mobility support of UEs served by MWAB. |
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| ***Consequences if not approved:*** | The mobility regarding MWAB is not clear.  |
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| ***Clauses affected:*** | 5.X.Y (new) |
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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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* First change (All Text New) \* \* \* \*

## 5.X Support for Mobile gNB with Wireless Access Backhauling (MWAB)

### 5.X.Y Mobility support of UEs served by MWAB

#### 5.X.Y.1 General

MWAB-gNB and MWAB-UE may connect to different PLMNs, i.e., the PLMN that the MWAB-UE registers to can be different from the one that the MWAB-gNB serves and advertises. And there is no impact to the UEs that connect to the MWAB regarding mobility involving a MWAB.

For UEs in RRC\_CONNECTED state, if the MWAB-gNB goes out-of-service due to e.g., MWAB-UE moves to an area where the MWAB is not allowed to provide the relay service, the procedures for MWAB authorization state change are handled according to clause 5.X.Y.

Editor's Note: Any impacts on N2 and Xn handover regarding the MWAB-gNB are determined by RAN WGs.

MWAB-gNB's configurations (e.g., Cell ID/TAC, AMF address, etc.) are managed by OAM of the PLMN it serves, see clause 5.X.Y, based on the location information provide by the MWAB-UE.

NOTE: The internal interaction between MWAB-UE and MWAB-gNB is not in the scope of this specification.

#### 5.X.Y.2 UE mobility between a fixed cell and MWAB cell

When there is a need to change the camping cell from fixed cell to MWAB cell or vise versa, e.g., a MWAB goes out-of-service (due to e.g. MWAB moves to an area where the MWAB is not allowed to provide the service), or UEs that do not move together with MWAB node:

- For UEs in RRC\_IDLE and RRC\_INACTIVE state procedure for cell (re‑)selection as specified in TS 38.304 [50] and TS 23.122 [17] for RRC\_IDLE and RRC\_INACTIVE is used between MWAB cell and other cells as normal;

- For UEs in RRC\_CONNECTED state, the MWAB-gNB or gNB triggers the handover procedures to the neighbouring cells for UEs in RRC\_CONNECTED state served by the MWAB or gNB.

NOTE: The MWAB-gNB triggers handover procedure when it is possible for the UEs accessing emergency service and being served by the MWAB, if MWAB is about to become unavailable to provide the services.

#### 5.X.Y.3 UE mobility between MWAB cells

Similar to the behaviours described in clause 5.X.Y.2, UEs and MWAB-gNB use existing procedures as specified in clause 8.23 of TS 38.401 [42], TS 23.502 [3], or TS 38.304 [50] to handle the mobility between MWAB cells.

#### 5.X.Y.4 UE mobility when moving together with a MWAB cell

Upon mobility, the TAC, gNB ID, and/or cell IDs broadcasted by the MWAB-gNB cell(s) can be (re)-configured by the OAM server used by the MWAB. The MWAB-gNB updates such information to the AMFs it is connected with. The MWAB-gNB remains connected by the same AMF or served by a different AMF in the same or different PLMNs. If the UE AMF does not change, the MWAB-gNB's gNB ID does not change.

For a UE served by a MWAB cell, it may observe change of TAC and/or cell IDs, even if it is still connected to the same MWAB. This can trigger mobility registrations of the CM-IDLE UE(s), as defined in TS 23.502 [3], if the new TAC is not in the TAI list in the RA.

If MWAB-gNB changes the AMF it connects due to mobility, the TAC(s) and Cell ID(s) it announces also change.

Editor's Note: The support of inter-gNB HO procedure or intra-gNB cell mobility is FFS and will be coordinated with RAN WGs.

#### 5.X.Y.5 MWAB mobility

Upon mobility, the UPF and/or AMF used for BH connections of the MWAB-UE may change:

- The MWAB-UE may request new or modify existing N2/N3 BH PDU sessions, upon request from the MWAB-gNB which are based on triggers configured by OAM depending on the MWAB-gNB location.

- The MWAB-gNB updates the TNL association of the N2 interface and N3 interfaces by using the new IP addresses of the new BH PDU sessions after the new BH PDU sessions are established. The PSA of the PDU Session for the BH connection might be kept or changed as the MWAB-UE moves.

- For N2 connection, if PSA is changed, SCTP association migration upon release of the original BH PDU session will be used (e.g., by using SCTP level associations reconfiguration).

- For N3 GTP-UE tunnels used for the PDU sessions of the UEs the MWAB serves, the MWAB-gNB uses the PDU session Resource Modify Indication to each AMF of the UEs it serves to update the DL transport network level information for the sessions as specified in TS 38.413 [34].

\* \* \* \* End of changes \* \* \* \*