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

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

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.501** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *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:*** | MWAB authorization | | | | | | | | | |
|  |  | | | | | | | | | |
| ***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 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)* | |
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| ***Reason for change:*** | | Based on the KI#2 conclusion of TR 23.700-06 v0.4.0, it is proposed to capture the descriptions of MWAB authorization into TS 23.501. | | | | | | | | |
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| ***Summary of change:*** | | Add the new clause for MWAB authorization to TS 23.501. | | | | | | | | |
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| ***Consequences if not approved:*** | | The feature of MWAB defined in TR 23.700-06 is not implemented in TS 23.501. | | | | | | | | |
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| ***Clauses affected:*** | | 5.x(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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* \* First change \* \* \* \*(all new texts)

## 5.x Support for Mobile gNB with wireless access backhauling (MWAB)

### 5.x.y MWAB authorization

MWAB authorization includes MWAB-UE authorization and MWAB-gNB service authorization, which are managed by different entities in the networks as described in the clause 5.x.y.1 and clause 5.x.y.2.

### 5.x.y.1 MWAB-UE authorization

MWAB-UE authorization is controlled by the 5GC of of backhauling network based on MWAB-UE subscription. The subscription information stored in the HPLMN of MWAB-UE indicates whether it is authorized to operate as MWAB. The subscribed S-NSSAI(s) for MWAB operation stored in the UDM also includes validity time for MWAB operation, which indicates the S-NSSAI(s) is available for the MWAB-UE or not.

The 5GC of backhauling network is configured with dedicated S-NSSAI(s)/DNN that are applied to MWAB operation.

During Registration procedure, the AMF serving the MWAB-UE includes the validity time for the dedicated S-NSSAI(s) in the Configured NSSAI in the Registration Accept message or via the UE Configuration Update procedure as described in the clause 5.15.16.

NOTE 1: It is assumed that both the MWAB-UE and 5GC of backhauling network support for temporarily available network slices as described in the clause 5.15.16.

MWAB-UE authorization supports additionally location-based control or time-based control:

- For location-based control, existing mechanism (per operator/PLMN based location restriction on S-NSSAI, service area restriction, DNN/LADN based control) shall be reused.

- For time-based control, after MWAB-UE is configured with validity time for an S-NSSAI for MWAB operation the following applies:

1. If the validity time indicates the S-NSSAI is available
   1. The MWAB-UE provides dedicated S-NSSAI(s) in the Requested NSSAI during Registration procedure to indicate the intention for MWAB operation. The serving AMF authorizes the MWAB based on the subscription information received from UDM. If the serving AMF accepts the Registration of MWAB-UE and includes dedicated S-NSSAI(s) in the Allowed NSSAI, the MWAB-UE establishs the BH PDU sessions associated with the dedicated S-NSSAI(s)/DNN that are applied to MWAB operation.
2. If the validity time indicates the S-NSSAI is not available
   1. The MWAB-UE shall not include the dedicated S-NSSAI(s) in the Requested NSSAI.
   2. If the dedicated S-NSSAI(s) is already part of the Allowed NSSAI, the serving AMF determines the MWAB-UE's authorization status changes from "authorized" to "unauthorized". The serving AMF may send UE Configuration Update message to remove the dedicated S-NSSAI(s) for MWAB operation from the Allowed NSSAI or de-register the MWAB-UE. If the MWAB-UE receives the new Allowed NSSAI in the UE Configuration Update message, the MWAB determines the MWAB-UE's authorization status is changed to "unauthorized". If the serving AMF is configured with a local timer, based on the expiration of local timer, the serving AMF requests the SMF to release any PDU session associated with the dedicated S-NSSAI(s)/DNN that are applied to MWAB operation. If the serving AMF is not configured with a local timer, the serving AMF requests the SMF to release any PDU session after sending UE Configuration Update message.

NOTE 2: When configured with a local timer, the AMF delays the PDU session release based on the local timer to allow MWAB to move all connected UEs via MWAB to other cells as specified in clause 8.9.10 of TS 38.401 [42].

### 5.x.y.2 MWAB-gNB authorization

The MWAB-gNB's serving PLMN OAM is aware of the MWAB-UE authorization limitations such as location or time limitation duration and controls the MWAB-gNB’s operation accordingly. The MWAB-gNB's serving PLMN OAM may pre-configure the MWAB-gNB with operation condition, which indicates when the MWAB-gNB turns on/shuts down, or monitor the MWAB-gNB’s operation and trigger MWAB-gNB to turn on/shut down based on on the MWAB-UE authorization limitations.

When the MWAB-gNB is authorized to operate by serving PLMN OAM, the MWAB-gNB requestes to establish the N2/N3/Xn with corresponding network entities. Otherwise, the MWAB-gNB should hand over the UE(s) it serves to other cells and release the connection of N2/N3/Xn. For the case that the BH PDU sessions are released by the MWAB-UE, the MWAB-gNB also performs shut-down steps.

In case of MWAB mobility as described in the 5.X.Y.5, the peer network entities of N2/N3/Xn connection of MWAB-gNB may determine to release the connection based on the MWAB-gNB’s location. When the current location of MWAB-gNB doesn’t allow the MWAB-gNB to access the old UPF and/or old AMF, the corresonding connection should be released.

NOTE 1: When MWAB moves, corresponding network entities accessed by the MWAB-gNB may be changed but the authorization status may not be changed.

Editor's note: The assumptions on RAN WGs and SA5 impacts of this KI will be further aligned.

NOTE 2: It is assumed that the serving PLMN OAM of the MWAB-gNB ensures the de-authorization of a MWAB-gNB is not conflicting with the de-authorization of MWAB-UE e.g., the allowed NSSAI for the BH PDU sessions of the MWAB-UE is maintained long enough for the MWAB-gNB to moves the connected UE away. The coordination of the MWAB-gNB service authorization/configuration from OAM and the update of subscription data (e.g., slice/DNN) of the MWAB-UE is handled by OAM/management system of the HPLMN of the MWAB-UE and the serving PLMN OAM of the MWAB-gNB. Such coordination is not in the scope of this specification.

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