**3GPP TSG SA-WG2 Meeting #156-e  *S2-230xxxx***

**Online, 17-21 April 2023 (*revision of*)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **-** | **rev** | **-** | **Current version:** | **18.1.0** |  |
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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:***  | Update of the UE configuration and UE authorization clauses |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | S2 |
|  |  |
| ***Work item code:*** | VMR |  | ***Date:*** | 2023-31-03 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | this CR provides update of the UE configuration and UE authorization clauses to remove editor’s notes. Clarifies the indication of support must happen also at NAS layer (e.g. in connected mode a Registration request must include it to let the AMF evaluate correctly whether a MRU still needs to consider the need to support MBSR functionality). |
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| ***Summary of change:*** | Provides the necessary normative text |
| ***--*** |  |
| ***Consequences if not approved:*** | Incomplete specification |
|  |  |
| ***Clauses affected:*** | 5.4.4a, 5.35A.2, 5.35A.4 |
|  |  |
|  | **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**

### 5.4.4a UE MM Core Network Capability handling

The UE MM Core Network Capability is split into the S1 UE network capability (mostly for E-UTRAN access related core network parameters) and the UE 5GMM Core Network Capability (mostly to include other UE capabilities related to 5GCN or interworking with EPS) as defined in TS 24.501 [47] and contains non radio-related capabilities, e.g. the NAS security algorithms, etc. The S1 UE network capability is transferred between all CN nodes at AMF to AMF, AMF to MME, MME to MME, and MME to AMF changes. The UE 5GMM Core Network Capability is transferred only at AMF to AMF changes.

In order to ensure that the UE MM Core Network Capability information stored in the AMF is up to date (e.g. to handle the situation when the USIM is moved into a different device while out of coverage, and the old device did not send the Detach message; and the cases of inter-RAT Registration Area Update), the UE shall send the UE MM Core Network Capability information to the AMF during the Initial Registration and Mobility Registration Update procedure within the NAS message.

The AMF shall store always the latest UE MM Core Network Capability received from the UE. Any UE MM Core Network Capability that an AMF receives from an old AMF/MME is replaced when the UE provides the UE MM Core Network Capability with Registration signalling.

If the UE's UE MM Core Network Capability information changes (in either CM-CONNECTED or in CM-IDLE state), the UE shall perform a Mobility Registration Update procedure when it next returns to NG-RAN coverage. See clause 4.2.2 of TS 23.502 [3].

The UE shall indicate in the UE 5GMM Core Network Capability if the UE supports:

- Attach in EPC with Request type "Handover" in PDN CONNECTIVITY Request message (clause 5.3.2.1 of TS 23.401 [26]).

- EPC NAS.

- SMS over NAS.

- LCS.

- 5G SRVCC from NG-RAN to UTRAN, as specified in TS 23.216 [88].

- Radio Capabilities Signalling optimisation (RACS).

- Network Slice-Specific Authentication and Authorization.

- Network Slice Replacement as described in clause 5.15.19.

- Parameters in Supported Network Behaviour for 5G CIoT as described in clause 5.31.2.

- Receiving WUS Assistance Information (E-UTRA) see clause 5.4.9.

- Paging Subgrouping Support Indication (NR) see clause 5.4.12.

- CAG, see clause 5.30.3.3.

- CAG with validity information (if UE supports CAG), see clause 5.30.3.3.

- Subscription-based restrictions to simultaneous registration of network slices (see clause 5.15.12).

- Support of NSAG (see clause 5.15.14).

- Partial Network Slice support in a RA (see clause 5.15.17).

- Minimization of Service Interruption (MINT), as described in clause 5.40.

- Equivalent SNPNs (see clause 5.30.2.11).

- Unavailability Period, as described in clause 5.4.1.4.

- Support for network reconnection due to RAN timing synchronization status change, see clause 5.3.4.4.

- UE Configuration of network-controlled Slice Usage Policy (see clause 5.15.15.2).

- Temporarily available network slices (see clause 5.15.16).

- Support of S-NSSAI location availability information, as described in clause 5.15.18.2.

- Support of MBSR functionality, as described in clause 5.35A.

If a UE operating two or more USIMs, supports and intends to use one or more Multi-USIM features (see clause 5.38) in a PLMN for a USIM, it shall indicate in the UE 5GMM Core Network Capability for this USIM in this PLMN that it supports these one or more Multi-USIM features with the following indications:

- Connection Release Supported.

- Paging Cause Indication for Voice Service Supported.

- Reject Paging Request Supported.

- Paging Restriction Supported.

Otherwise, the UE with the capabilities of Multi-USIM features but does not intend to use them shall not indicate support of these one or more Multi-USIM features.

A UE not operating two or more USIMs shall indicate the Multi-USIM features are not supported.

NOTE: It is not necessary for a UE operating two or more USIMs to use Multi-USIM features with all USIMs.

## **MORE CHANGES**

### 5.35A.2 Configuration of the MBSR

In order for an MBSR to operate as a mobile IAB node, it receives configuration from the OAM system of the serving PLMN as specified in TS 38.401 [42]. The MBSR IAB-UE establishes a secure and trusted connection to the OAM server only if it is authorized to operate as MBSR in the serving PLMN. The AMF, if configure to do so, can provide the MBSR IAB-UE with the IP address or FQDN of the OAM server in the Registration Accept Message, or the MBSR IAB UE can be pre-configured with MBSR IAB-UE Configuration information or provisioned with MBSR IAB-UE configuration information using existing UE Policy mechanism as defined in TS 23.503 [45] including the OAM access PDU session parameters for the authorized PLMNs

Editor's note: How the connection to OAM server, including in the roaming case, is established securely when the HPLMN provides the OAM access PDU session parameters is to be decided by interaction with SA WG3 and SA WG5. How the OAM access is secure using preconfigured information needs to be standardized with SA3 and SA5 and possibly CT groups if USIM is impacted.

IAB-UEWhen the MBSR IAB-UE is receiving indication from the AMF that the operation as MBSR is authorized, it establishes a PDU session used for the MBSR to access the OAM server.. The serving PLMN provides an Allowed NSSAI and establishes the PDU session for the OAM server access, considering the S-NSSAI and DNN requested by MBSR and/or the default values in subscription data.

In addition, the MBSRIAB-UE is assumed to be configured by the HPLMN with preferred PLMN lists and forbidden PLMNs by the HPLMN to perform PLMN selection as specified in TS 23.122 [17].

## **MORE CHANGES**

### 5.35A.4 MBSR authorization

For a MBSR, the subscription information stored in the HPLMN for the SUPI of the MBSR IAB-UE indicates whether it is authorized to operate as MBSR, and any location restriction in a PLMN and any authorisation information related to time or time periods the MBSR is allowed to operate as a MBSR.

When MBSR roaming is supported as part of a roaming agreement between a VPLMN and an HPLMN regarding the 5GC of the VPLMN callows a MBSR of the HPLMN to operate in the in VPLMN by checking the subscription information of the MBSR IAB-UE. When the MBSR (IAB-UE ) SUPI subscription information indicates the MBSR is allowed to operate, MBSR (IAB-DU) can use IAB-node integration procedure or inter-IAB-donor gNB mobility procedure to integrate into VPLMN to provide service.

The MBSRIAB-UE is assumed to be configured with preferred PLMN lists and forbidden PLMNs by the HPLMN to perform PLMN selection as specified in TS 23.122 [17]..

When the MBSR IAB-UE performs initial registration with the serving PLMN, it indicates in the 5GMM capabilities (see clause 5.4.4a) the request to operate as a MBSR as described in clause 5.35A.1 and includes a MBSR indication in RRC so that the gNB selects a MBSR capable AMF, and the Donor gNB includes the indication in N2 message to the AMF. The AMF authorizes the MBSR based on the MBSR IAB-UE subscription information, and provides MBSR authorized indication to NG-RAN in N2 message by which the Registration Accept (including a MBSR Operation Allowed indication) is sent to the MBSR IAB-UE. The MBSR IAB-UE uses MBSR Operation Allowed indication to know it can establish PDU session for the OAM connection. The MBSR establishes the connection to OAM system using the configuration information for MBSR operation if available.

NOTE 1: How the MBSR obtains the configuration information for MBSR operation is described in clause 5.35A.2.1.

The AMF of the MBSR can indicate to the MBSR IAB-UE (i.e. a UE indicating the Support of MBSR dunctionality in the 5GMM capability defined in clause 5.4.4a) that it is not allowed to act as an MBSR IAB node as part of a registration procedure at any time, and in this case the AMF includes a MBSR not authorized indication to donor-gNB in the N2 message carrying the Registration Accept message. The AMF may provide the indication either in a Registration Accept (if the PLMN allows the MBSR IAB-UE to be registered in the PLMM) or in a Registration Reject (if the PLMN does not allow the MBSR IAB-UE to be registered in the PLMN).

When the MBSR authorization status changes (e.g. because the subscription information includes location restrictions or authorization time or time period information) the AMF provide the changed authorization status by means of a of UE Configuration Command message to the MBSR IAB-UE, or in a Registration Accept or Reject messages if the change of authorization status is detected upon Mobility Registration Update) which indicates to the MBSR IAB-UE that the MBSR is not allowed to act as an MBSR IAB node or that it is allowed to act as MBSR IAB node, including, respectively a MBSR not authorized or MBSR authorized indication in the N2 message to the NG-RAN.

NOTE 2: The mechanism applies to both roaming and non-roaming MBSR operations.

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## **MORE CHANGES**

## **MORE CHANGES**

## **END of CHANGES**