**3GPP TSG-CT WG1 Meeting #122-eC1-200402**

**Electronic meeting, 20-28 February 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **1902** | **rev** | **-** | **Current version:** | **16.3.0** |  |
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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 |  | Core Network | **X** |

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| ***Title:*** | RACS not apply for non-3GPP access | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Vivo, Nokia?, Nokia Shanghai Bell? | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | RACS | | | | |  | ***Date:*** | | | 2020-02-13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | *Rel-16* |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | RACS feature does not apply to non-3GPP access.  UE radio capability ID deletion indication is sent in UCU over 3GPP access only. | | | | | | | | |
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| ***Summary of change:*** | | Add RACS feature does not apply to non-3GPP access in 4.7.2.1;  Clarify that UE radio capability ID deletion indication is sent in UCU over 3GPP access only. | | | | | | | | |
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| ***Consequences if not approved:*** | | Misunderstanding that RACS may apply to non-3GPP access.  UE radio capability ID deletion indication could be send in UCU over non-3GPP access. | | | | | | | | |
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| ***Clauses affected:*** | | 4.7.2.1, 5.4.4.1 | | | | | | | | |
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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:*** | |  | | | | | | | | |

\*\*\*\*\* Start of changes \*\*\*\*\*

#### 4.7.2.1 General

The mobility management procedures defined over 3GPP access are re-used over non-3GPP access with the following exceptions:

a) the registration status, and the 5GMM parameters of the UE's 3GPP access and non-3GPP access 5GMM state machine instances are independent in each of these accesses and can be different;

b) single-registration mode and dual-registration mode do not apply for 5GMM over non-3GPP access;

c) the RPLMN over non-3GPP access can be different from the RPLMN over 3GPP access. The MCC of the RPLMN over 3GPP access and the MCC of the RPLMN over the non-3GPP access can also be different;

d) the registration for 3GPP access and for non-3GPP access are performed separately. Like for 3GPP access, an access stratum connection exists before the UE can perform the registration procedure for non-3GPP access. As over non-3GPP access the 5GS operates one single common registration area for an entire PLMN, which is associated with the operator-specific N3GPP TAI for the PLMN, list management of registration areas is not required, and registration updating due to registration area change with the registered PLMN is not performed. Furthermore, the periodic registration update procedure is also not performed. New registration at change of PLMN is required;

e) the 5GMM over non-3GPP access in the UE considers that the N1 NAS signalling connection is established when the lower layers indicate that the access stratum connection is established succcessfully;

f) the UE-initiated service request procedure via non-3GPP access is supported. Upon indication from the lower layers of non-3GPP access, that the access stratum connection is established between the UE and the network, the UE in 5GMM-REGISTERED state and in 5GMM-IDLE mode over non-3GPP access shall initiate the service request procedure via non-3GPP access. The UE may indicate with the service request message the PDU session(s) associated with non-3GPP access to re-establish user-plane resources for which the UE has pending user data to be sent;

g) paging procedure is not performed via non-3GPP access;

h) service area restrictions do not apply for non-3GPP access other than the wireline access;

i) the establishment cause for non-3GPP access is determined according to subclause 4.7.2.2;

j) eCall inactivity procedure is not performed via non-3GPP access;

k) local area data network (LADN) does not apply for non-3GPP access;

l) the Allowed PDU session IE shall not be included in the REGISTRATION REQUEST message or the SERVICE REQUEST message sent over non-3GPP access;

m) DRX parameters do not apply for non-3GPP access;

n) Mobile initiated connection only mode (MICO) does not apply for non-3GPP access;

o) CIoT 5GS optimizations do not apply for non-3GPP access;

p) unified access control does not apply for non-3GPP access; and

r) UE radio capability signalling optimisation (RACS) does not apply for non-3GPP access.

\*\*\*\*\* Next change \*\*\*\*\*

## 4.16 UE radio capability signalling optimisation

UE radio capability signalling optimisation (RACS) is a feature that is optional at both the UE and the network and which aims to optimise the transmission of UE radio capability over the radio interface (see 3GPP TS 23.501 [8]). RACS works by assigning an identifier to represent a set of UE radio capabilities. This identifier is called the UE radio capability ID. A UE radio capability ID can be either manufacturer-assigned or network-assigned. The UE radio capability ID is an alternative to the signalling of the radio capabilities container over the radio interface.

In this release of the specification, RACS is applicable to neither NB-N1 mode nor non-3GPP access.

If the UE supports RACS:

a) the UE shall indicate support for RACS by setting the RACS bit to "RACS supported" in the 5GMM capability IE of the REGISTRATION REQUEST message;

b) if the UE performs a registration procedure for initial registration and the UE has an applicable UE radio capability ID for the current UE radio configuration in the selected network, the UE shall include the UE radio capability ID in the UE radio capability ID IE as a non-cleartext IE in the REGISTRATION REQUEST message. If both a network-assigned UE radio capability ID and a manufacturer-assigned UE Radio Capability ID are applicable, the UE shall include the network-assigned UE radio capability ID in the REGISTRATION REQUEST message;

c) if the radio configuration at the UE changes (for instance because the UE has disabled a specific radio capability) then:

1) if the UE has an applicable UE radio capability ID for the new UE radio configuration, the UE shall initiate a registration procedure for mobility and periodic registration update. The UE shall include the applicable UE radio capability ID in the UE radio capability ID IE of the REGISTRATION REQUEST message and shall include the 5GS update type IE in the REGISTRATION REQUEST message with the NG-RAN-RCU bit set to "NG-RAN radio capability update needed". If both a network-assigned UE radio capability ID and a manufacturer-assigned UE Radio Capability ID are applicable, the UE shall include the network-assigned UE radio capability ID in the REGISTRATION REQUEST message; and

2) if the UE does not have an applicable UE radio capability ID for the new UE radio configuration, the UE shall initiate a registration procedure for mobility and periodic registration update and include the 5GS update type IE in the REGISTRATION REQUEST message with the NG-RAN-RCU bit set to "NG-RAN radio capability update needed";

NOTE: Performing the registration procedure for mobility and periodic registration update and including the 5GS update type IE in the REGISTRATION REQUEST message with the NG-RAN-RCU bit set to "NG-RAN radio capability update needed" without a UE radio capability ID included in the REGISTRATION REQUEST message can trigger the network to assign a new UE radio capability ID to the UE.

d) upon receiving a network-assigned UE radio capability ID in the REGISTRATION ACCEPT message or the CONFIGURATION UPDATE COMMAND message, the UE shall store the network-assigned UE radio capability ID and the PLMN ID or SNPN identity of the serving network along with a mapping to the current UE radio configuration in its non-volatile memory as specified in annex C. The UE shall be able to store at least the last 16 received network-assigned UE radio capability IDs with the associated PLMN ID or SNPN identity and the mapping to the corresponding UE radio configuration;

e) the UE shall not use a network-assigned UE radio capability ID assigned by a PLMN in PLMNs equivalent to the PLMN which assigned it; and

f) upon receiving a UE radio capability ID deletion indication IE set to "delete network-assigned UE radio capability IDs" in the REGISTRATION ACCEPT message or the CONFIGURATION UPDATE COMMAND message, the UE shall delete all network-assigned UE radio capability IDs stored at the UE for the serving network, initiate a registration procedure for mobility and periodic registration update and include an applicable manufacturer-assigned UE radio capability ID for the current UE radio configuration, if available at the UE, in the UE radio capability ID IE of the REGISTRATION REQUEST message.

If the network supports RACS:

a) the network may assign a network-assigned UE radio capability ID to a UE which supports RACS by including a UE radio capability ID IE in the REGISTRATION ACCEPT message or in the CONFIGURATION UPDATE COMMAND message;

b) the network may trigger the UE to delete all network-assigned UE radio capability IDs stored at the UE for the serving network by including a UE radio capability ID deletion indication IE set to "delete network-assigned UE radio capability IDs" in the REGISTRATION ACCEPT message or in the CONFIGURATION UPDATE COMMAND message; and

c) the network may send an IDENTITY REQUEST message to the UE that supports RACS to retrieve the PEI, if not available in the network.

Editor's note [WI: RACS, CR#1355]: Whether RACS is applicable to SNPNs needs to be confirmed by SA2.

\*\*\*\*\* Next change \*\*\*\*\*

#### 5.4.4.1 General

The purpose of this procedure is to:

a) allow the AMF to update the UE configuration for access and mobility management-related parameters decided and provided by the AMF by providing new parameter information within the command; or

b) request the UE to perform a registration procedure for mobility and periodic registration update towards the network to update access and mobility management-related parameters decided and provided by the AMF (see subclause 5.5.1.3).

This procedure is initiated by the network and can only be used when the UE has an established 5GMM context, and the UE is in 5GMM-CONNECTED mode. When the UE is in 5GMM-IDLE mode, the AMF may use the paging or notification procedure to initiate the generic UE configuration update procedure. The AMF can request a confirmation response in order to ensure that the parameter has been updated by the UE.

This procedure shall be initiated by the network to assign a new 5G-GUTI to the UE after a successful service request procedure invoked as a response to a paging request from the network and before the release of the N1 NAS signalling connection. If the service request procedure was triggered due to 5GSM downlink signalling pending, the procedure for assigning a new 5G-GUTI can be initiated by the network after the transport of the 5GSM downlink signalling.

The following parameters are supported by the generic UE configuration update procedure without the need to request the UE to perform the registration procedure for mobility and periodic registration update:

a) 5G-GUTI;

b) TAI list;

c) Service area list;

d) Network identity and time zone information (Full name for network, short name for network, local time zone, universal time and local time zone, network daylight saving time);

e) LADN information;

f) Rejected NSSAI;

g) void;

h) Operator-defined access category definitions;

i) SMS indication;

j) Service gap time value;

k) "CAG information list";

l) UE radio capability ID; and

m) 5GS registration result.

The following parameters can be sent to the UE with or without a request to perform the registration procedure for mobility and periodic registration update:

a) Allowed NSSAI;

b) Configured NSSAI; or

c) Network slicing subscription change indication.

The following parameter is sent to the UE with a request to perform the registration procedure for mobility and periodic registration update:

a) MICO indication; or

b) UE radio capability ID deletion indication.

The following parameters are sent over 3GPP access only:

a) LADN information;

b) MICO indication;

c) TAI list;

d) Service area list;

e) Service gap time value;

f) "CAG information list";

g) UE radio capability ID; and

h) UE radio capability ID deletion indication.

The following parameters are managed and sent per access type i.e., independently over 3GPP access or non 3GPP access:

a) Allowed NSSAI; and

b) Rejected NSSAI (when the NSSAI is rejected for the current registration area).

The following parameters are managed commonly and sent over 3GPP access or non 3GPP access:

a) 5G-GUTI;

b) Network identity and time zone information;

c) Rejected NSSAI (when the NSSAI is rejected for the current PLMN);

d) Configured NSSAI;

e) SMS indication;

f) 5GS registration result.



Figure 5.4.4.1.1: Generic UE configuration update procedure

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