**3GPP TSG-CT WG1 Meeting #126-eC1-206483**

**Electronic meeting, 15-23 October 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **2461** | **rev** | **2** | **Current version:** | **16.6.0** |  |
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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 |  | Radio Access Network |  | Core Network | **x** |

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| ***Title:*** | 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging | | | | | | | | | |
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| ***Source to WG:*** | Samsung, Qualcomm Incorporated, InterDigital, Huawei, HiSilicon, CATT, Vodafone, ZTE, Nokia, Nokia Shanghai Bell, SHARP, Intel, OPPO | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_CIoT | | | | |  | ***Date:*** | | | 2020-10-01 |
|  |  | | | |  | |  | | |  |
| ***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) Rel-17 (Release 17)* | |
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| ***Reason for change:*** | | In their meeting SA#89e, SA plenary approved the working agreement in [SP-200870](https://protect2.fireeye.com/v1/url?k=0ddddc4a-50ba986c-0ddc5705-0cc47a31384a-da28ef5d6bbfdbd6&q=1&e=2d952afb-14b0-4a9f-98c1-3d02654bd06c&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_sa%2FTSG_SA%2FTSGS_89E_Electronic%2FDocs%2FSP-200870.zip) on 5G-GUTI reallocation and sent an LS to CT1 in [SP-200883](https://protect2.fireeye.com/v1/url?k=6fbdac3f-3271609a-6fbc2770-0cc47a30d446-917b2b98e158f0c5&q=1&e=11ffca4b-662c-4732-b745-282b5bb88556&u=http%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_sa%2FTSG_SA%2FTSGs_89E_Electronic%2FDocs%2FSP-200883.zip) asking CT1 to update their specifications and send the CRs to CT#90.  This CR introduces the relevant changes to TS 24.501 regarding the allocation of a new 5G GUTI after the resumption of a suspended connection even if a NAS message is not sent. | | | | | | | | |
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| ***Summary of change:*** | | The AMF allocates a new 5G-GUTI after paging the UE in 5GMM-IDLE mode with suspend indication even if the service request procedure is not initiated by the UE. | | | | | | | | |
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| ***Consequences if not approved:*** | | The UE’s privacy is risked since the the UE’s presence in a particular location can be identified. | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.3, 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:*** | | Rev#1: This revision is to align with the outcome of SA#89e plenary meeting. The only changes are on the cover sheet.  Rev#2: Applying similar changes to section 5.3.3. | | | | | | | | |

\*\*\*\*\*\* START CHANGE \*\*\*\*\*\*

### 5.3.3 Temporary identities

A temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. In case of PLMN the 5G-GUTI is globally unique and in case of SNPN the 5G-GUTI is unique within an SNPN. When the UE is registered to the same PLMN or SNPN over 3GPP and non-3GPP access, the UE and the AMF maintain one 5G-GUTI that is common to both 3GPP and non-3GPP access. When the UE is registered to different PLMNs or SNPNs over 3GPP access and non-3GPP access, the UE maintains two 5G-GUTIs, a 5G-GUTI for the registration with a PLMN or SNPN over the 3GPP access and another 5G-GUTI for the registration with another PLMN or SNPN over the non-3GPP access. In the paging and service request procedures, a shortened form of the 5G-GUTI, the 5G S-temporary mobile subscriber identity (5G-S-TMSI), is used to enable more efficient radio signalling. The purpose of the 5G-GUTI and 5G-S-TMSI is to provide identity confidentiality, i.e., to protect a user from being identified and located by an intruder. The structure of the 5G-GUTI and its derivatives are specified in 3GPP TS 23.003 [4]. The 5G-GUTI has two main components (see 3GPP TS 23.501 [8]):

a) the GUAMI; and

b) the 5G-TMSI that provides an unambiguous identity of the UE within the AMF(s) identified by the GUAMI.

NOTE: The UE registered with an SNPN over non-3GPP access refers to the UE accessing SNPN services via a PLMN.

The 5G-S-TMSI has three main components:

a) the AMF set ID that uniquely identifies the AMF set within the AMF region;

b) the AMF pointer that identifies one or more AMFs within the AMF set; and

c) the 5G-TMSI.

A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages. In the SERVICE REQUEST message, the UE includes a valid 5G-S-TMSI as user identity. The AMF shall assign a new 5G-GUTI for a particular UE:

a) during a successful initial registration procedure;

b) during a successful registration procedure for mobility registration update;

c) 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 as specified in subclause 5.4.4.1; and

d) after the AMF receives an indication from the lower layers that the RRC connection has been resumed for a UE in 5GMM-IDLE mode with suspend indication and this resumption is a response to a paging request from the network, and before the:

1) release of the N1 NAS signalling connection; or

2) suspension of the N1 NAS signalling connection due to user plane CIoT 5GS optimization i.e. before the UE and the AMF enter 5GMM-IDLE mode with suspend indication.

The AMF should assign a new 5G-GUTI for a particular UE during a successful registration procedure for periodic registration update. The AMF may assign a new 5G-GUTI at any time for a particular UE by performing the generic UE configuration update procedure.

If a new 5G-GUTI is assigned by the AMF, the UE and the AMF handle the 5G-GUTI as follows:

a) Upon receipt of a 5GMM message containing a new 5G-GUTI, the UE considers the new 5G-GUTI as valid and the old 5G-GUTI as invalid, stops timer T3519 if running, and deletes any stored SUCI. The new 5G-GUTI is stored in a non-volatile memory in the USIM if the corresponding file is present in the USIM, else in the non-volatile memory in the ME, as described in annex C.

b) The AMF considers the old 5G-GUTI as invalid as soon as an acknowledgement for a registration or generic UE configuration update procedure is received.

\*\*\*\*\*\* 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) 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; or

b) the AMF receives an indication from the lower layers that the RRC connection has been resumed for a UE in 5GMM-IDLE mode with suspend indication and this resumption is a response to a paging request from the network, and before the:

1) release of the N1 NAS signalling connection; or

2) suspension of the N1 NAS signalling connection due to user plane CIoT 5GS optimization i.e. before the UE and the AMF enter 5GMM-IDLE mode with suspend indication.

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;

m) 5GS registration result; and

n) Truncated 5G-S-TMSI configuration.

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 parameters are sent to the UE with a request to perform the registration procedure for mobility and periodic registration update:

a) MICO indication;

b) UE radio capability ID deletion indication; and

c) Additional configuration 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;

h) UE radio capability ID deletion indication;

i) Truncated 5G-S-TMSI configuration; and

j) Additional configuration 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 or rejected for the failed or revoked NSSAA);

d) Configured NSSAI;

e) SMS indication;

f) 5GS registration result.



Figure 5.4.4.1.1: Generic UE configuration update procedure

\*\*\*\*\*\* END CHANGE \*\*\*\*\*\*