**3GPP TSG-CT WG1 Meeting #134-eC1-221447**

**E-meeting, 17th – 25th February 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **4066** | **rev** | **-** | **Current version:** | **17.5.0** |  |
|  | | | | | | | | |
| *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 |  | Core Network | **X** |

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| ***Title:*** | HPLMN control in roaming area | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung, Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MINT | | | | |  | ***Date:*** | | | 2022-02-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | CT1 has agreed stage-2 CR C1-220849. This CR implements stage-3 aspects of CT1 agreement. i.e. code points for providing indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' to the UE using UPU procedure. | | | | | | | | |
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| ***Summary of change:*** | | Code points for providing indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' to the UE using UPU procedure. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Code points for providing indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' to UE is not available. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.24, 5.4.5.3.3, 9.11.3.53A, C.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 23.122 CR 0870 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\* changes \*\*\*\*\*

## 4.24 Minimization of service interruption

The UE and the network may support Minimization of service interruption (MINT). MINT aims to enable a UE to obtain service from a PLMN offering disaster roaming service when a disaster condition applies to the UE's determined PLMN with disaster condition.

If the UE supports MINT, the indication of whether disaster roaming is enabled in the UE, the indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN', the one or more "list of PLMN(s) to be used in disaster condition", disaster roaming wait range and disaster return wait range provisioned by the network, if available, are stored in the non-volatile memory in the ME as specified in annex C and are kept when the UE enters 5GMM-DEREGISTERED state. Annex C specifies condition under which the indication of whether disaster roaming is enabled in the UE, the indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN', the one or more "lists of PLMN(s) to be used in disaster condition", disaster roaming wait range and disaster return wait range stored in the ME are deleted.

Upon selecting a PLMN for disaster roaming as specified in 3GPP TS 23.122 [6]:

a) if the UE does not have a stored disaster roaming wait range, the UE shall perform an initial registration procedure with 5GS registration type value set to "disaster roaming registration" on the selected PLMN; and

b) if the UE has a stored disaster roaming wait range, the UE shall generate a random number within the disaster roaming wait range and start a timer with the generated random number. While the timer is running, the UE shall not initiate registration on the selected PLMN. Upon expiration of the timer, the UE shall perform an initial registration procedure with 5GS registration type value set to "disaster roaming registration" if still camped on the selected PLMN.

Upon determining that a disaster condition has ended and that the UE shall perform PLMN selection as specified in 3GPP TS 23.122 [6]:

a) if the UE does not have a stored disaster roaming wait range, the UE shall perform a registration procedure on the selected PLMN; and

b) if the UE has a stored disaster return wait range, the UE shall generate a random number within the disaster return wait range and start a timer with the generated random number value. While the timer is running, the UE shall not initiate registration on the selected PLMN. Upon expiration of the timer, the UE shall perform a registration procedure if still camped on the selected PLMN.

When the AMF assigns a registration area to the UE registered for disaster roaming services, the AMF shall only include TAIs covering the area with the disaster condition.

\*\*\*\*\* changes \*\*\*\*\*

##### 5.4.5.3.3 Network-initiated NAS transport of messages

Upon reception of a DL NAS TRANSPORT message, the UE shall stop the timer T3346 if running.

Upon reception of a DL NAS TRANSPORT message, if the Payload container type IE is set to:

a) "N1 SM information" and the 5GMM cause IE is not included in the DL NAS TRANSPORT message, the 5GSM message in the Payload container IE and the PDU session ID are handled in the 5GSM procedures specified in clause 6;

b) "SMS", the UE shall forward the content of the Payload container IE to the SMS stack entity;

c) "LTE Positioning Protocol (LPP) message container", the UE shall forward the payload container type, the content of the Payload container IE and the routing information included in the Additional information IE to the upper layer location services application;

d) "SOR transparent container" and if the Payload container IE:

1) successfully passes the integrity check (see 3GPP TS 33.501 [24]), the ME shall store the received SOR counter as specified in annex C and proceed as follows:

i) If the Payload container IE indicates a list of preferred PLMN/access technology combinations is provided and the list type indicates "PLMN ID and access technology list", then the ME shall replace the highest priority entries in the "Operator Controlled PLMN Selector with Access Technology" list stored in the ME.

If the SOR-CMCI is present and the Store SOR-CMCI in ME indicator is set to "Store SOR-CMCI in ME" then the UE shall store or delete the SOR-CMCI in the non-volatile memory of the ME as described in annex C.1;

ii) If the list type indicates "secured packet", then the ME shall behave as if a SMS is received with protocol identifier set to SIM data download, data coding scheme set to class 2 message and SMS payload as secured packet contents of SOR transparent container IE. The SMS payload is forwarded to UICC as specified in 3GPP TS 23.040 [4A]; or

iii) If the Payload container IE indicates "HPLMN indication that 'no change of the "Operator Controlled PLMN Selector with Access Technology" list stored in the UE is needed and thus no list of preferred PLMN/access technology combinations is provided'", the UE operates in SNPN access operation mode and the Payload container IE includes SOR-SNPN-SI, the ME shall replace SOR-SNPN-SI of the selected entry of the "list of subscriber data" or associated with the selected PLMN subscription, as specified in 3GPP TS 23.122 [5] with the received SOR-SNPN-SI.

Editor's note (WI eNPN, CR#3584): Whether the UE can receive the SOR-SNPN-SI when registering or registered to a PLMN is FFS.

If the SOR-CMCI is present and the Store SOR-CMCI in ME indicator is set to "Store SOR-CMCI in ME" then the UE shall store or delete the SOR-CMCI in the non-volatile memory of the ME as described in annex C.1;

If the ACK bit of the SOR header for SOR data type in the SOR transparent container is set to "acknowledgement requested" and the list type indicates:

A) "PLMN ID and access technology list"; or

B) "secured packet" and the ME receives status bytes from the UICC indicating that the UICC has received the secured packet successfully;

then the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "SOR transparent container" as specified in subclause 5.4.5.2.2. In the Payload container IE carrying the acknowledgement, the UE shall set the ME support of SOR-CMCI indicator to "SOR-CMCI supported by the ME".

The UE shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C; or

2) does not successfully pass the integrity check (see 3GPP TS 33.501 [24]) then the UE shall discard the content of the payload container IE and proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C.

e) Void;

f) Void;

g) "N1 SM information" and:

1) the 5GMM cause IE is set to the 5GMM cause #22 "Congestion", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to DNN based congestion control along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE;

2) the 5GMM cause IE is set to the 5GMM cause #28 "Restricted service area", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to service area restrictions along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, enters the state 5GMM-REGISTERED.NON-ALLOWED-SERVICE and, if the DL NAS TRANSPORT message is received over 3GPP access, performs the registration procedure for mobility and periodic registration update without waiting for the release of the N1 NAS signalling connection (see subclauses 5.3.5 and 5.5.1.3);

3) the 5GMM cause IE is set to the 5GMM cause #65 "maximum number of PDU sessions reached", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded because the PLMN's maximum number of PDU sessions has been reached, along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message;

4) the 5GMM cause IE is set to the 5GMM cause #67 "insufficient resources for specific slice and DNN", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to S-NSSAI and DNN based congestion control along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE;

5) the 5GMM cause IE is set to the 5GMM cause #69 "insufficient resources for specific slice", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to S-NSSAI only based congestion control along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE;

5a) the 5GMM cause IE is set to the 5GMM cause #78 "PLMN not allowed to operate at the present UE location", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded because the UE is registered to a PLMN via a satellite NG-RAN cell that is not allowed to operate at the present UE location along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message;

6) the 5GMM cause IE is set to the 5GMM cause #90 "payload was not forwarded", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to routing failure along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message;

7) the 5GMM cause IE is set to the 5GMM cause #91 "DNN not supported or not subscribed in the slice", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded because the DNN is not supported or not subscribed in a slice along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE, if any;

8) the 5GMM cause IE is set to the 5GMM cause #92 "insufficient user-plane resources for the PDU session", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to insufficient user-plane resources along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message.

h) "UE policy container", the UE policy container in the Payload container IE is handled in the UE policy delivery procedures specified in Annex D;

i) "UE parameters update transparent container" and if the Payload container IE

1) successfully passes the integrity check (see 3GPP TS 33.501 [24]), the ME shall store the received UE parameter update counter as specified in annex C and proceed as follows:

i) if the UE parameters update list includes a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data",

A) the ME shall behave as if an SMS is received with protocol identifier set to SIM data download, data coding scheme set to class 2 message and SMS payload as secured packet contents of UE parameters update transparent container IE. The SMS payload is forwarded to UICC as specified in 3GPP TS 23.040 [4A]; and

B) if the ACK bit of the UE parameters update header in the UE parameters update transparent container is set to "acknowledgment requested" and if the ME receives status bytes from the UICC indicating that the UICC has received the secured packet successfully, the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "UE parameters update transparent container" as specified in subclause 5.4.5.2.2; and

C) if the ME receives a REFRESH command from the UICC as specified in 3GPP TS 31.111 [22A] and if the REG bit of the UE parameters update header in the UE parameters update transparent container IE is set to "re-registration requested", and:

C1) the UE is registered over 3GPP access, then the UE shall wait until the emergency services over 3GPP access, if any, are completed, enter 5GMM-IDLE mode over 3GPP access or 5GMM-CONNECTED mode with RRC inactive indication, perform a de-registration procedure, and then delete its 5G-GUTI if the UE is registered to different PLMN or SNPN on non-3GPP access or the UE is not registered over non-3GPP access, or wait until the de-registration procedure over non-3GPP access specified in case C2) or C3) is completed before deleting its 5G-GUTI if the UE is registered to same PLMN or SNPN on non-3GPP access, and then initiate a registration procedure for initial registration as specified in subclause 5.5.1.2;

C2) the UE is registered over non-3GPP access and does not have emergency services ongoing over non-3GPP access, then the UE shall locally release the N1 NAS signalling connection and enter 5GMM-IDLE mode over non-3GPP access, perform a de-registration procedure, and then delete its 5G-GUTI if the UE is registered to different PLMN or SNPN on 3GPP access or the UE is not registered over 3GPP access, or wait until the de-registration procedure over 3GPP access specified in case C1) is completed before deleting its 5G-GUTI if the UE is registered to same PLMN or SNPN on 3GPP access, and then initiate a registration procedure for initial registration as specified in subclause 5.5.1.2; and

C3) the UE is registered over non-3GPP access and has an emergency services ongoing over non-3GPP access, then the UE shall wait until the emergency services are completed before locally releasing the N1 NAS signalling connection and enter 5GMM-IDLE mode over non-3GPP access, perform a de-registration procedure, and then delete its 5G-GUTI if the UE is registered to different PLMN or SNPN on 3GPP access or if the UE is not registered over 3GPP access, or wait until the de-registration procedure over 3GPP access specified in case C1) is completed before deleting its 5G-GUTI if the UE is registered to same PLMN or SNPN on 3GPP access, and then initiate a registration procedure for initial registration as specified in subclause 5.5.1.2.

ii) if the UE parameters update list includes a UE parameters update data set with UE parameters update data set type indicating "Default configured NSSAI update data",

A) if the ACK bit of the UE parameters update header in the UE parameters update transparent container is set to "acknowledgment requested" and if the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "UE parameters update transparent container" as specified in subclause 5.4.5.2.2

B) the ME shall replace the stored default configured NSSAI with the default configured NSSAI included in the default configured NSSAI update data. In case of SNPN, the ME shall replace the stored default configured NSSAI associated with the selected entry of the "list of subscriber data" or the PLMN subscription with the default configured NSSAI included in the default configured NSSAI update data; and

C) if the REG bit of the UE parameters update header in the UE parameters update transparent container is set to "re-registration requested" and the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the UE shall wait until it enters 5GMM-IDLE mode and then the UE shall initiate a registration procedure for mobility registration update as specified in subclause 5.5.1.3.

if the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the UE used the old default configured NSSAI to create the requested NSSAI in a REGISTRATION REQUEST message, the UE does not have a configured NSSAI for the current PLMN and the UE has an allowed NSSAI for the current PLMN which contains one or more S-NSSAIs that are not included in the new default configured NSSAI, the UE shall wait until it enters 5GMM-IDLE mode and then the UE shall initiate a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3; and

iii) if the UE parameters update list includes a UE parameters update data set with UE parameters update data set type indicating "Disaster roaming information update data",

A) if the ACK bit of the UE parameters update header in the UE parameters update transparent container is set to "acknowledgment requested" and if the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data" or a UE parameters update data set with UE parameters update data set type indicating "Default configured NSSAI update data", the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "UE parameters update transparent container" as specified in subclause 5.4.5.2.2;

B) the UE shall delete the indication of whether disaster roaming is enabled in the UE stored in the ME, if any, and store the indication of whether disaster roaming is enabled in the UE included in the disaster roaming information update data in the ME;

C) the UE shall delete the indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' stored in the ME, if any, and store the indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' included in the disaster roaming information update data in the ME; and

D) if the REG bit of the UE parameters update header in the UE parameters update transparent container is set to "re-registration requested" and the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the UE shall wait until it enters 5GMM-IDLE mode and then the UE shall initiate a registration procedure for mobility registration update as specified in subclause 5.5.1.3.

2) does not successfully pass the integrity check (see 3GPP TS 33.501 [24]) then the UE shall discard the content of the payload container IE;

j) "Location services message container" and the 5GMM cause IE is not included in the DL NAS TRANSPORT message, the UE shall forward the payload container type, the content of the Payload container IE and the routing information in the Additional information IE if included to the upper layer location services application;

k) "CIoT user data container", the UE shall forward the content of the Payload container IE and the PDU session ID to the 5GSM sublayer;

l) "CIoT user data container" and:

1) the 5GMM cause IE is set to the 5GMM cause #22 "Congestion", the UE passes to the 5GSM sublayer an indication that the CIoT user data was not forwarded due to DNN based congestion control along with the CIoT user data from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE.

2) the 5GMM cause IE is set to the 5GMM cause #90 "payload was not forwarded", the UE passes to the 5GSM sublayer an indication that the user data container was not forwarded due to routing failure along with the user data container from the Payload container IE and the PDU session ID from the PDU session ID IE of the DL NAS TRANSPORT message.

m) "Service-level-AA container" and the Service-level device ID included in the Service-level-AA container is set to a CAA-level UAV ID, the UE shall forward the content of the Payload container IE to the upper layer application for UAS corresponding to the CAA-level UAV ID; and

n) "Multiple payloads", the UE shall first decode the content of the Payload container IE (see subclause 9.11.3.39) to obtain the number of payload container entries and for each payload container entry, the UE shall:

1) decode the payload container type field;

2) decode the optional IE fields and the payload container contents field in the payload container entry; and

3) handle the content of each payload container entry the same as the content of the Payload container IE and the associated optional IEs as specified in bullets a) to m) above according to the payload container type field.

\*\*\*\*\* changes \*\*\*\*\*

#### 9.11.3.53A UE parameters update transparent container

The purpose of the UE parameters update transparent container when sent from the network to the UE is to provide UE parameters update data, optional acknowledgement request and optional re-registration request. The purpose of the UE parameters update transparent container when sent from the UE to the network is to indicate the UE acknowledgement of successful reception of the UE parameters update transparent container.

The UE parameters update transparent container information element is coded as shown in figure 9.11.3.53A.1, figure 9.11.3.53A.2, figure 9.11.3.53A.3, figure 9.11.3.53A.4, figure 9.11.3.53A.5, figure 9.11.3.53A.6, figure 9.11.3.53A.7 and table 9.11.3.53A.1.

The UE parameters update transparent container is a type 6 information element with a minimum length of 20 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| UE parameters update transparent container IEI | | | | | | | | octet 1 |
| Length of UE parameters update transparent container contents | | | | | | | | octet 2  octet 3 |
| UE parameters update header | | | | | | | | octet 4 |
| UPU-MAC-IAUSF | | | | | | | | octet 5-20 |
| CounterUPU | | | | | | | | octet 21-22 |
| UE parameters update list | | | | | | | | octet 23\* - n\* |

Figure 9.11.3.53A.1: UE parameters update transparent container information element for UE parameters update data type with value "0"

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | 3 | 2 | 1 | |  | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | UE parameters update data set 1 type | | | | | octet 23\* | |
| Length of UE parameters update data set 1 | | | | | | | | | | | | | octet 24\*-  25\* | |
| UE parameters update data set 1 | | | | | | | | | | | | | octet 26\*-  x\* | |
| … | | | | | | | | | | | | |  | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | UE parameters update data set n type | | | | | octet y\* | |
| Length of UE parameters update data set n | | | | | | | | | | | | | octet y+1\*-  y+2\* | |
| UE parameters update data set n | | | | | | | | | | | | | octet y+3\*-  n\* | |

Figure 9.11.3.53A.2: UE parameters update list

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Secured packet | | | | | | | | octet a\* - a+z\* |

Figure 9.11.3.53A.3: UE parameters update data set for UE parameters update data set type with value "0001"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Default configured NSSAI | | | | | | | | octet b\* -  c\* |

Figure 9.11.3.53A.4: UE parameters update data set for UE parameters update data set type with value "0010"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | AOL | DREI | octet d\* |

Figure 9.11.3.53A.4A: UE parameters update data set for UE parameters update data set type with value "0011"

|  |  |
| --- | --- |
| UE parameters update transparent container IEI | octet 1 |
| Length of UE parameters update transparent container contents | octet 2  octet 3 |
| UE parameters update header | octet 4 |
| UPU-MAC-IUE | octet 5 - 20 |

Figure 9.11.3.53A.5: UE parameters update transparent container information element for UE parameters update data type with value "1"

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | REG | | ACK | | UPU data type | | octet 4 | |

Figure 9.11.3.53A.6: UE parameters update header for UE parameters update data type with value "0"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | UPU data type | octet 4 |

Figure 9.11.3.53A.7: UE parameters update header for UE parameters update data type with value "1"

Table 9.11.3.53A.1: UE parameters update transparent container information element

|  |  |
| --- | --- |
| UPU-MAC-IAUSF, UPU-MAC-IUE and CounterUPU are coded as specified in 3GPP TS 33.501 [24] | |
|  | |
| UPU data type (octet 4, bit 1) | |
| 0 | The UE parameters update transparent container carries a UE parameters update list |
| 1 | The UE parameters update transparent container carries an acknowledgement of successful reception of a UE parameters update list |
|  | |
| Acknowledgement (ACK) value (octet 4, bit 2) | |
| 0 | acknowledgement not requested |
| 1 | acknowledgement requested |
|  | |
| Re-registration (REG) value (octet 4, bit 3) | |
| 0 | re-registration not requested |
| 1 | re-registration requested |
|  | |
| UE parameters update data set type | |
| Bits  4 3 2 1 | |
| 0 0 0 1 Routing indicator update data | |
| 0 0 1 0 Default configured NSSAI update data | |
| 0 0 1 1 Disaster roaming information updating data | |
| All other values are reserved | |
|  | |
| Disaster Roaming Enabled Indication (DREI) value (octet d\*, bit 1) | |
| |  |  | | --- | --- | | 0 | Disaster roaming is disabled in the UE | | 1 | Disaster roaming is enabled in the UE | | |
|  | |
| Indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' (AOL) value (octet d\*, bit 2) | |
| |  |  | | --- | --- | | 0 | false | | 1 | true | | |
|  | |
| The secured packet is coded as specified in 3GPP TS 31.115 [22B]. | |
|  | |
| The default configured NSSAI is encoded as the value part of the NSSAI IE (see subclause 9.11.3.37). | |

\*\*\*\*\* changes \*\*\*\*\*

## C.1 Storage of 5GMM information for UEs not operating in SNPN access operation mode

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

a) 5G-GUTI;

b) last visited registered TAI;

c) 5GS update status;

d) 5G NAS security context parameters from a full native 5G NAS security context (see 3GPP TS 33.501 [24]);

e) KAUSF and KSEAF (see 3GPP TS 33.501 [24]);

f) SOR counter (see subclause 9.11.3.51); and

g) UE parameter update counter (see subclause 9.11.3.53A);

The UE may support multiple records of NAS security context storage for multiple registration (see 3GPP TS 31.102 [22]). If the UE supports multiple records of NAS security context storage for multiple registration, the first 5G security context of one access shall be stored in record 1 of the 5G NAS Security Context USIM file for that access and the second 5G security context of that access shall be stored in record 2 of the same file. The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [22].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

The following 5GMM parameters shall be stored in a non-volatile memory in the ME together with the SUPI from the USIM:

- configured NSSAI(s);

- NSSRG information;

- NSSAI inclusion mode(s);

- MPS indicator;

- MCS indicator;

- operator-defined access category definitions;

- network-assigned UE radio capability IDs;

- "CAG information list", if the UE supports CAG;

- signalled URSP (see 3GPP TS 24.526 [19]);

- SOR-CMCI;

- one or more lists of type "list of PLMN(s) to be used in disaster condition", if the UE supports MINT;

- disaster roaming wait range, if the UE supports MINT;

- disaster return wait range, if the UE supports MINT;

- indication of whether disaster roaming is enabled in the UE; and

- indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN'.

Each configured NSSAI consists of S-NSSAI(s) stored together with a PLMN identity, if it is associated with a PLMN. The UE shall store the S-NSSAI(s) of the HPLMN. If the UE is in the VPLMN, the UE shall also store the configured NSSAI for the current PLMN and any necessary mapped S-NSSAI(s). The configured NSSAI(s) can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the configured NSSAI(s). A configured NSSAI may be associated with NSSRG information.

Each NSSAI inclusion mode is associated with a PLMN identity and access type. The NSSAI inclusion mode(s) can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the NSSAI inclusion mode(s).

The MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions. The maximum number of stored operator-defined access category definitions is UE implementation dependent.

Each network-assigned UE radio capability ID is stored together with a PLMN identity of the PLMN that provided it as well as a mapping to the corresponding UE radio configuration, and is valid in that PLMN. A network-assigned UE radio capability ID can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the network-assigned UE radio capability ID. The UE shall be able to store at least the last 16 received network-assigned UE radio capability IDs. There shall be only one network-assigned UE radio capability ID stored for a given combination of PLMN identity and UE radio configuration and any existing UE radio capability ID shall be deleted when a new UE radio capability ID is added for the same combination of PLMN identity and UE radio configuration. If the UE receives a network-assigned UE radio capability ID with a Version ID value different from the value included in the network-assigned UE radio capability ID(s) stored at the UE for the serving PLMN, the UE may delete these stored network-assigned UE radio capability ID(s).

The allowed NSSAI(s) can be stored in a non-volatile memory in the ME together with the SUPI from the USIM. Allowed NSSAI consists of S-NSSAI(s) stored together with a PLMN identity, if it is associated with a PLMN. If the allowed NSSAI is stored, then the UE shall store the S-NSSAI(s) of the HPLMN. If the UE is in the VPLMN, the UE shall also store the allowed NSSAI for the serving PLMN and any necessary mapping of the allowed NSSAI for the serving PLMN to the S-NSSAI(s) of the HPLMN. The allowed NSSAI(s) can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the allowed NSSAI(s).

If the UE is registered for emergency services, the UE shall not store the 5GMM parameters described in this annex on the USIM or in non-volatile memory. Instead the UE shall temporarily store these parameters locally in the ME and the UE shall delete these parameters when the UE is deregistered.

If the UE is configured for eCall only mode as specified in 3GPP TS 31.102 [22], the UE shall not store the 5GMM parameters described in this annex on the USIM or in non-volatile memory. Instead the UE shall temporarily store these parameters locally in the ME and the UE shall delete these parameters when the UE enters 5GMM-DEREGISTERED.eCALL-INACTIVE state, the UE is switched-off or the USIM is removed.

The "CAG information list" can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the "CAG information list".

The handling of the SOR-CMCI stored in the non-volatile memory in the ME is specified in 3GPP TS 23.122 [5].

Each "list of PLMN(s) to be used in disaster condition" is stored together with the PLMN identity of the PLMN that provided it. The stored lists of type "list of PLMN(s) to be used in disaster condition" can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the lists of type "list of PLMN(s) to be used in disaster condition". The UE shall store at least the "list of PLMN(s) to be used in disaster condition" provided by the HPLMN or EHPLMN. The maximum number of stored lists of type "list of PLMN(s) to be used in disaster condition" provided by a PLMN other than the HPLMN or EHPLMN is UE implementation dependent.

The disaster roaming wait range can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the disaster roaming wait range.

The disaster return wait range can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the disaster return wait range.

The indication of whether disaster roaming is enabled in the UE can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the indication of whether disaster roaming is enabled in the UE.

The indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN'.

Editor's note (WI MINT, CR#4066): Whether the ME deletes indication of "whether disaster roaming is enabled" or indication of 'applicability of "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN' upon change of country or when the UE is switched-off is FFS. Also to further study the conditions on how to coordinate and make use of the mentioned indications stored on the USIM and the ME.

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