**3GPP TSG-CT WG1 Meeting #131-eC1-21XXX**

**Electronic meeting, 19 – 27 Aug 2021 *was C1-214644***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **3543** | **rev** | **1** | **Current version:** | **17.3.1** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | No need to derive RRC establishment cause in case of NAS signalling connection establishment following fallback indication | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GProtoc17 | | | | |  | ***Date:*** | | | 2021-08-12 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | * The AS indicate to NAS the fallback of RRC connection after receiving the RRCSetup message in response to an RRCReestablishmentRequest, an RRCResumeRequest or RRCResumeRequest1, see the following text quoted from clause 5.3.3.4 of TS 38.331.   *The UE shall perform the following actions upon reception of the RRCSetup:*  *1> if the RRCSetup is received in response to an RRCReestablishmentRequest; or*  *1> if the RRCSetup is received in response to an RRCResumeRequest or RRCResumeRequest1:*  *…*  *2> indicate to upper layers fallback of the RRC connection;*   * As the following figures quoted from Figure 5.3.7.1-2 and Figure 5.3.13.1-2 of TS38.331 specified, UE is expected to sent out the RRCSetupComplete message afterwards.        * As the following message definition quoted from clause 6.2.2 of TS 38.331 specified, the RRCSetupComplete message with NAS message container does not have the RRC establishment cause field.     Hence the description of the following note in 24.501 is inaccurate, it is proposed to update it.  *NOTE 2: Access for the purpose of NAS signalling connection recovery during an ongoing service as defined in subclause 4.5.5, or for the purpose of NAS signalling connection establishment following fallback indication from lower layers during an ongoing service as defined in subclause 4.5.5, is mapped to the access category of the ongoing service in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.* | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | In case of NAS signalling connection establishment following fallback indication from lower layers no need to derive an RRC establishment cause | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Inaccurate description | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.5.2, 4.5.2A, 4.5.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 1st change \*\*\*\*\*

### 4.5.2 Determination of the access identities and access category associated with a request for access for UEs not operating in SNPN access mode

When the UE needs to initiate an access attempt in one of the events listed in subclause 4.5.1, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

The set of the access identities applicable for the request is determined by the UE in the following way:

a) for each of the access identities 1, 2, 11, 12, 13, 14 and 15 in table 4.5.2.1, the UE shall check whether the access identity is applicable in the selected PLMN, if a new PLMN is selected, or otherwise if it is applicable in the RPLMN or equivalent PLMN; and

b) if none of the above access identities is applicable, then access identity 0 is applicable.

Table 4.5.2.1: Access identities

|  |  |
| --- | --- |
| Access Identity number | UE configuration |
| 0 | UE is not configured with any parameters from this table |
| 1 (NOTE 1) | UE is configured for multimedia priority service (MPS). |
| 2 (NOTE 2) | UE is configured for mission critical service (MCS). |
| 3-10 | Reserved for future use |
| 11 (NOTE 3) | Access Class 11 is configured in the UE. |
| 12 (NOTE 3) | Access Class 12 is configured in the UE. |
| 13 (NOTE 3) | Access Class 13 is configured in the UE. |
| 14 (NOTE 3) | Access Class 14 is configured in the UE. |
| 15 (NOTE 3) | Access Class 15 is configured in the UE. |
| NOTE 1: Access identity 1 is valid when: - the USIM file EFUAC\_AIC indicates the UE is configured for access identity 1 and the selected PLMN, if a new PLMN is selected, or RPLMN is the HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present), or a visited PLMN of the home country (see the definition of home country in 3GPP TS 24.301 [15]); or - the UE receives the 5GS network feature support IE with the MPS indicator bit set to "Access identity 1 valid" from the RPLMN as described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4.  NOTE 2: Access identity 2 is used by UEs configured for MCS and is valid when: - the USIM file EFUAC\_AIC indicates the UE is configured for access identity 2 and the selected PLMN, if a new PLMN is selected, or RPLMN is the HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present), or a visited PLMN of the home country (see 3GPP TS 23.122 [5]); or - the UE receives the 5GS network feature support IE with the MCS indicator bit set to "Access identity 2 valid" from the RPLMN as described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4.  NOTE 3: Access identities 11 and 15 are valid in HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present). Access Identities 12, 13 and 14 are valid in HPLMN and visited PLMNs of home country only (see the definition of home country in 3GPP TS 24.301 [15]). | |

The UE uses the MPS indicator bit of the 5GS network feature support IE to determine if access identity 1 is valid. Processing of the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4. The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present) prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid".

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), the contents of the USIM file EFUAC\_AIC as specified in 3GPP TS 31.102 [22] and the rules specified in table 4.5.2.1 are used to determine the applicability of access identity 1. When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid. When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC indicates the UE is configured for access identity 1, the MPS indicator bit of the 5GS network feature support IE is not applicable. When the UE is not in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), the contents of the USIM file EFUAC\_AIC are not applicable.

The UE uses the MCS indicator bit of the 5GS network feature support IE to determine if access identity 2 is valid. Processing of the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4. The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present) prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid".

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), the contents of the USIM file EFUAC\_AIC as specified in 3GPP TS 31.102 [22] and the rules specified in table 4.5.2.1 are used to determine the applicability of access identity 2. When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid. When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC indicates the UE is configured for access identity 2, the MCS indicator bit of the 5GS network feature support IE is not applicable. When the UE is not in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), the contents of the USIM file EFUAC\_AIC are not applicable.

When the UE is in its HPLMN (if the EHPLMN list is not present or is empty) or in an EHPLMN (if the EHPLMN list is present), the contents of the USIM file EFACC as specified in 3GPP TS 31.102 [22] and the rules specified in table 4.5.2.1 are used to determine the applicability of access classes 11 and 15. When the UE is not in its HPLMN (if the EHPLMN list is not present or is empty) or in an EHPLMN (if the EHPLMN list is present), access classes 11 and 15 are not applicable.

When the UE is in the country of its HPLMN, the contents of the USIM file EFACC as specified in 3GPP TS 31.102 [22] and the rules specified in table 4.5.2.1 are used to determine the applicability of access classes 12 - 14. When the UE is not in the country of its HPLMN, access classes 12-14 are not applicable.

In order to determine the access category applicable for the access attempt, the NAS shall check the rules in table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see subclause 4.5.3).

NOTE: The case when an access attempt matches more than one rule includes the case when multiple events trigger an access attempt at the same time.

Table 4.5.2.2: Mapping table for access categories

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Rule # | | Type of access attempt | | Requirements to be met | | Access Category | |
| 1 | | Response to paging or NOTIFICATION over non-3GPP access;  5GMM connection management procedure initiated for the purpose of transporting an LPP message without an ongoing 5GC-MO-LR procedure;  Access attempt to handover of ongoing MMTEL voice call, MMTEL video call or SMSoIP from non-3GPP access | | Access attempt is for MT access, or handover of ongoing MMTEL voice call, MMTEL video call or SMSoIP from non-3GPP access | | 0 (= MT\_acc) | |
| 2 | | Emergency | | UE is attempting access for an emergency session (NOTE 1, NOTE 2) | | 2 (= emergency) | |
| 3 | | Access attempt for operator-defined access category | | UE stores operator-defined access category definitions valid in the current PLMN as specified in subclause 4.5.3, and access attempt is matching criteria of an operator-defined access category definition | | 32-63  (= based on operator classification) | |
| 3.1 | | Access attempt for MO exception data | | UE is in NB-N1 mode and allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [17] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [22]), and access attempt is for MO data or for MO signalling initiated upon receiving a request from upper layers to transmit user data related to an exceptional event. | | 10 (= MO exception data) | |
| 4 | | Access attempt for delay tolerant service | | (a) UE is configured for NAS signalling low priority or UE supporting S1 mode is configured for EAB (see the "ExtendedAccessBarring" leaf of NAS configuration MO in 3GPP TS 24.368 [17] or 3GPP TS 31.102 [22]) where "EAB override" does not apply, and  (b): the UE received one of the categories a, b or c as part of the parameters for unified access control in the broadcast system information, and the UE is a member of the broadcasted category in the selected PLMN or RPLMN/equivalent PLMN  (NOTE 3, NOTE 5, NOTE 6, NOTE 7, NOTE 8) | | 1 (= delay tolerant) | |
| 4.1 | | MO IMS registration related signalling | | Access attempt is for MO IMS registration related signalling (e.g. IMS initial registration, re-registration, subscription refresh)  or for NAS signalling connection recovery during ongoing procedure for MO IMS registration related signalling (NOTE 2a) | | 9 (= MO IMS registration related signalling) | |
| 5 | | MO MMTel voice call | | Access attempt is for MO MMTel voice call  or for NAS signalling connection recovery during ongoing MO MMTel voice call (NOTE 2) | | 4 (= MO MMTel voice) | |
| 6 | | MO MMTel video call | | Access attempt is for MO MMTel video call  or for NAS signalling connection recovery during ongoing MO MMTel video call (NOTE 2) | | 5 (= MO MMTel video) | |
| 7 | | MO SMS over NAS or MO SMSoIP | | Access attempt is for MO SMS over NAS (NOTE 4) or MO SMS over SMSoIP transfer  or for NAS signalling connection recovery during ongoing MO SMS or SMSoIP transfer (NOTE 2) | | 6 (= MO SMS and SMSoIP) | |
| 8 | | UE NAS initiated 5GMM specific procedures | | Access attempt is for MO signalling | | 3 (= MO\_sig) | |
| 8.1 | | Mobile originated location request | | Access attempt is for mobile originated location request (NOTE 9) | | 3 (= MO\_sig) | |
| 8.2 | | Mobile originated signalling transaction towards the PCF | | Access attempt is for mobile originated signalling transaction towards the PCF (NOTE 10) | | 3 (= MO\_sig) | |
| 9 | | UE NAS initiated 5GMM connection management procedure or 5GMM NAS transport procedure | | Access attempt is for MO data | | 7 (= MO\_data) | |
| 10 | | An uplink user data packet is to be sent for a PDU session with suspended user-plane resources | | No further requirement is to be met | | 7 (= MO\_data) | |
| NOTE 1: This includes 5GMM specific procedures while the service is ongoing and 5GMM connection management procedures required to establish a PDU session with request type = "initial emergency request" or "existing emergency PDU session", or to re-establish user-plane resources for such a PDU session. This further includes the service request procedure initiated with a SERVICE REQUEST message with the Service type IE set to "emergency services fallback".  NOTE 2: Access for the purpose of NAS signalling connection recovery during an ongoing service as defined in subclause 4.5.5, is mapped to the access category of the ongoing service in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.  NOTE 2a: Access for the purpose of NAS signalling connection recovery during an ongoing procedure for MO IMS registration related signalling as defined in subclause 4.5.5, is mapped to the access category of the MO IMS registration related signalling in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.  NOTE 3: If the UE selects a new PLMN, then the selected PLMN is used to check the membership; otherwise the UE uses the RPLMNor a PLMN equivalent to the RPLMN.  NOTE 4: This includes the 5GMM connection management procedures triggered by the UE-initiated NAS transport procedure for transporting the MO SMS.  NOTE 5: The UE configured for NAS signalling low priority is not supported in this release of specification. If a UE supporting both S1 mode and N1 mode is configured for NAS signalling low priority in S1 mode as specified in 3GPP TS 24.368 [17] or 3GPP TS 31.102 [22], the UE shall ignore the configuration for NAS signalling low priority when in N1 mode.  NOTE 6: If the access category applicable for the access attempt is 1, then the UE shall additionally determine a second access category from the range 3 to 7. If more than one access category matches, the access category of the lowest rule number shall be chosen. The UE shall use the second access category only to derive an RRC establishment cause for the access attempt.  NOTE 7: "EAB override" does not apply, if the UE is not configured to allow overriding EAB (see the "Override\_ExtendedAccessBarring" leaf of NAS configuration MO in 3GPP TS 24.368 [17] or 3GPP TS 31.102 [22]), or if NAS has not received an indication from the upper layers to override EAB and the UE does not have a PDU session that was established with EAB override.  NOTE 8: For the definition of categories a, b and c associated with access category 1, see 3GPP TS 22.261 [3]. The categories associated with access category 1 are distinct from the categories a, b and c associated with EAB (see 3GPP TS 22.011 [1A]).  NOTE 9: This includes: a) the UE-initiated NAS transport procedure for transporting a mobile originated location  request; b) the 5GMM connection management procedure triggered by a) above; and c) NAS signalling connection recovery during an ongoing 5GC-MO-LR procedure.  NOTE 10: This includes: a) the UE-initiated NAS transport procedure for transporting a mobile originated signalling  transaction towards the PCF; b) the 5GMM connection management procedure triggered by a) above; and c) NAS signalling connection recovery during an ongoing UE triggered V2X policy provisioning  procedure. . d) NAS signalling connection recovery during an ongoing UE triggered ProSe policy  provisioning procedure. | | | | | | | |

\*\*\*\*\* end of 1st change \*\*\*\*\*

\*\*\*\*\* start of 2nd change \*\*\*\*\*

### 4.5.2A Determination of the access identities and access category associated with a request for access for UEs operating in SNPN access mode

When the UE needs to initiate an access attempt in one of the events listed in subclause 4.5.1, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

The set of the access identities applicable for the request is determined by the UE in the following way:

a) for each of the access identities 1, 2, 11, 12, 13, 14 and 15 in table 4.5.2A.1, the UE shall check whether the access identity is applicable in the selected SNPN, if a new SNPN is selected, or otherwise if it is applicable in the RSNPN; and

b) if none of the above access identities is applicable, then access identity 0 is applicable.

Table 4.5.2A.1: Access identities

|  |  |
| --- | --- |
| Access Identity number | UE configuration |
| 0 | UE is not configured with any parameters from this table |
| 1 (NOTE 1) | UE is configured for multimedia priority service (MPS). |
| 2 (NOTE 2) | UE is configured for mission critical service (MCS). |
| 3-10 | Reserved for future use |
| 11 (NOTE 3) | Access Class 11 is configured in the UE. |
| 12 (NOTE 3) | Access Class 12 is configured in the UE. |
| 13 (NOTE 3) | Access Class 13 is configured in the UE. |
| 14 (NOTE 3) | Access Class 14 is configured in the UE. |
| 15 (NOTE 3) | Access Class 15 is configured in the UE. |
| NOTE 1: Access identity 1 is valid when: - the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) indicates the UE is configured for access identity 1 in the selected SNPN, if a new SNPN is selected, or RSNPN; or - the UE receives the 5GS network feature support IE with the MPS indicator bit set to "Access identity 1 valid" from the RSNPN as described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4.  NOTE 2: Access identity 2 is used by UEs configured for MCS and is valid when: - the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) indicates the UE is configured for access identity 2 in the selected SNPN, if a new SNPN is selected, or RSNPN; or - the UE receives the 5GS network feature support IE with the MCS indicator bit set to "Access identity 2 valid" from the RSNPN as described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4.  NOTE 3: Access identities 11 to 15 are valid if indicated as configured for the UE in the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) in the selected SNPN, if a new SNPN is selected, or RSNPN. | |

The contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) and the rules specified in table 4.5.2A.1 are used to determine the applicability of access identity 1 in the SNPN. When the contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) do not indicate the UE is configured for access identity 1 for the SNPN, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

The contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) and the rules specified in table 4.5.2A.1 are used to determine the applicability of access identity 2 in the SNPN. When the contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) do not indicate the UE is configured for access identity 2 for the SNPN, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

The contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) and the rules specified in table 4.5.2A.1 are used to determine the applicability of access classes 11 to 15 in the SNPN.

In order to determine the access category applicable for the access attempt, the NAS shall check the rules in table 4.5.2A.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see subclause 4.5.3).

NOTE: The case when an access attempt matches more than one rule includes the case when multiple events trigger an access attempt at the same time.

Table 4.5.2A.2: Mapping table for access categories

|  |  |  |  |
| --- | --- | --- | --- |
| Rule # | Type of access attempt | Requirements to be met | Access Category |
| 1 | Response to paging or NOTIFICATION over non-3GPP access (NOTE 11);  5GMM connection management procedure initiated for the purpose of transporting an LPP message without an ongoing 5GC-MO-LR procedure;  Access attempt to handover of MMTEL voice call, MMTEL video call or SMSoIP from non-3GPP access | Access attempt is for MT access, or handover of ongoing MMTEL voice call, MMTEL video call or SMSoIP from non-3GPP access | 0 (= MT\_acc) |
| 2 | Emergency | UE is attempting access for an emergency session (NOTE 1, NOTE 2) | 2 (= emergency) |
| 3 | Access attempt for operator-defined access category | UE stores operator-defined access category definitions valid in the SNPN as specified in subclause 4.5.3, and access attempt is matching criteria of an operator-defined access category definition | 32-63  (= based on operator classification) |
| 4 | Access attempt for delay tolerant service | (a) UE is configured for NAS signalling low priority, and  (b) the UE received one of the categories a, b or c as part of the parameters for unified access control in the broadcast system information, and the UE is a member of the broadcasted category in the selected SNPN or RSNPN  (NOTE 3, NOTE 5, NOTE 6, NOTE 7, NOTE 8) | 1 (= delay tolerant) |
| 4.1 | MO IMS registration related signalling | Access attempt is for MO IMS registration related signalling (e.g. IMS initial registration, re-registration, subscription refresh)  or for NAS signalling connection recovery during ongoing procedure for MO IMS registration related signalling (NOTE 2a) | 9 (= MO IMS registration related signalling) |
| 5 | MO MMTel voice call | Access attempt is for MO MMTel voice call  or for NAS signalling connection recovery during ongoing MO MMTel voice call (NOTE 2) | 4 (= MO MMTel voice) |
| 6 | MO MMTel video call | Access attempt is for MO MMTel video call  or for NAS signalling connection recovery during ongoing MO MMTel video call (NOTE 2) | 5 (= MO MMTel video) |
| 7 | MO SMS over NAS or MO SMSoIP | Access attempt is for MO SMS over NAS (NOTE 4) or MO SMS over SMSoIP transfer  or for NAS signalling connection recovery during ongoing MO SMS or SMSoIP transfer (NOTE 2) | 6 (= MO SMS and SMSoIP) |
| 8 | UE NAS initiated 5GMM specific procedures | Access attempt is for MO signalling | 3 (= MO\_sig) |
| 8.1 | Mobile originated location request | Access attempt is for mobile originated location request (NOTE 9) | 3 (= MO\_sig) |
| 8.2 | Mobile originated signalling transaction towards the PCF | Access attempt is for mobile originated signalling transaction towards the PCF (NOTE 10) | 3 (= MO\_sig) |
| 9 | UE NAS initiated 5GMM connection management procedure or 5GMM NAS transport procedure | Access attempt is for MO data | 7 (= MO\_data) |
| 10 | An uplink user data packet is to be sent for a PDU session with suspended user-plane resources | No further requirement is to be met | 7 (= MO\_data) |
| NOTE 1: Void  NOTE 2: Access for the purpose of NAS signalling connection recovery during an ongoing service as defined in subclause 4.5.5, is mapped to the access category of the ongoing service in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.  NOTE 2a: Access for the purpose of NAS signalling connection recovery during an ongoing MO IMS registration related signalling as defined in subclause 4.5.5, is mapped to the access category of the MO IMS registration related signalling in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.  NOTE 3: If the UE selects a new SNPN, then the selected SNPN is used to check the membership; otherwise the UE uses the RSNPN.  NOTE 4: This includes the 5GMM connection management procedures triggered by the UE-initiated NAS transport procedure for transporting the MO SMS.  NOTE 5: The UE configured for NAS signalling low priority is not supported in this release of specification.  NOTE 6: If the access category applicable for the access attempt is 1, then the UE shall additionally determine a second access category from the range 3 to 7. If more than one access category matches, the access category of the lowest rule number shall be chosen. The UE shall use the second access category only to derive an RRC establishment cause for the access attempt.  NOTE 7: Void.  NOTE 8: For the definition of categories a, b and c associated with access category 1, see 3GPP TS 22.261 [3]. The categories associated with access category 1 are distinct from the categories a, b and c associated with EAB (see 3GPP TS 22.011 [1A]).  NOTE 9: This includes: a) the UE-initiated NAS transport procedure for transporting a mobile originated location  request; b) the 5GMM connection management procedure triggered by a) above; and c) NAS signalling connection recovery during an ongoing 5GC-MO-LR procedure.  NOTE 10: This includes: a) the UE-initiated NAS transport procedure for transporting a mobile originated signalling  transaction towards the PCF; b) the 5GMM connection management procedure triggered by a) above; and c) NAS signalling connection recovery during an ongoing UE triggered V2X policy provisioning  procedure.  d) NAS signalling connection recovery during an ongoing UE triggered ProSe policy   provisioning procedure.  NOTE 11: The term "non-3GPP access" refers to the case when the UE is accessing SNPN services via a PLMN. | | | |

\*\*\*\*\* end of 2nd change \*\*\*\*\*

\*\*\*\*\* start of 3rd change \*\*\*\*\*

### 4.5.5 Exception handling and avoiding double barring

Access attempts are allowed to proceed without further access control checking in order to avoid double barring for any service request or registration procedure initiated for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclauses 5.3.1.2 and 5.3.1.4). For any service request or registration procedure of this kind the UE determines an access category as specified in subclause 4.5.1 and 4.5.2 or 4.5.2A, unless a different access category is specified in the rest of the present subclause.

NOTE 1: Although the access control checking is skipped, the access category is determined for the specific access attempt in order to derive an RRC establishment cause except for the NAS signalling connection establishment following a fallback indication from the lower layers (see subclauses 5.3.1.2 and 5.3.1.4).

There are several services or an MO IMS registration related signalling for which the NAS needs to be informed when the service starts and stops,

- because, while the service is ongoing or the MO IMS registration related signalling is ongoing, the mapping of other access attempts to a specific access category can be affected; and

- in order to avoid double barring at the start of these services or at the start of the MO IMS registration related signalling.

These services are:

a) emergency service;

b) MMTEL voice;

c) MMTEL video;

d) SMSoIP;

e) SMS over NAS;

f) 5GC-MO-LR procedure;

g) UE triggered V2X policy provisioning procedure;

h) CIoT user data transfer over the control plane; and

i) UE triggered ProSe policy provisioning procedure.

The UE considers an emergency service a) as started when 5GMM receives a request from upper layers to register for emergency services or to establish a PDU session with request type = "initial emergency request" or "existing emergency PDU session". It considers the emergency service as stopped when this PDU session is released.

In addition, the UE considers an emergency service a) as started when the 5GMM receives a request from the upper layers to perform emergency services fallback and performs emergency services fallback as specified in subclause 4.13.4.2 of 3GPP TS 23.502 [9]. In this case, the UE considers the emergency service as stopped when:

- the emergency PDU session established during the emergency services fallback is released if the UE has moved to an E-UTRA cell connected to 5GCN; or

- the service request procedure involved in the emergency services fallback is completed otherwise.

While an emergency service a) is ongoing, any access attempt triggered by the initiation of a registration, de-registration or service request procedure or by an uplink user data packet to be sent for a PDU session with suspended user-plane resources is mapped to access category 2 = emergency.

Once the emergency service has successfully passed access control, then as long as the service is ongoing, the following access attempts are allowed to proceed without further access control checking in order to avoid double barring:

- any service request procedure related to the PDU session associated with request type = "initial emergency request" or "existing emergency PDU session"; and

- any uplink user data packet to be sent for a PDU session with suspended user-plane resources associated with request type = "initial emergency request" or "existing emergency PDU session".

NOTE 2: Although the access control checking is skipped, the mapping is performed in order to derive an RRC establishment cause.

For services b) to h) the 5GMM receives explicit start and stop indications from the upper layers.

For the case of handover of ongoing services b) to d) from non-3GPP access, the 5GMM receives an additional explicit handover of ongoing service from non-3GPP access indication from the upper layer.Once the service has successfully passed access control, then as long as the service is ongoing, the following access attempts are allowed to proceed without further access control checking in order to avoid double barring:

- for services b), c) and d):

1) any service request procedure related to the PDU session established for DNN = "IMS" except between receiving from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access categories except category 0, and receiving from the lower layers an indication that the barring is alleviated for the access category determined for the access attempt; and

2) any uplink user data packet to be sent for a PDU session with suspended user-plane resources established for DNN = "IMS" except between receiving from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access categories except category 0, and receiving from the lower layers an indication that the barring is alleviated for the access category determined for the access attempt;

- for service d), if the upper layers have indicated a DNN used for SMSoIP and the indicated DNN used for SMSoIP is different from "IMS":

1) any service request procedure related to the PDU session established for the DNN used for SMSoIP except between receiving from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access categories except category 0, and receiving from the lower layers an indication that the barring is alleviated for access category 6; and

2) any uplink user data packet to be sent for a PDU session with suspended user-plane resources established for the DNN used for SMSoIP except between receiving from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access category except category 0, and receiving from the lower layers an indication that the barring is alleviated for access category 6.

For the MO IMS registration related signalling, the 5GMM receives explicit start and stop indications from the upper layers.

Once the MO IMS registration related signalling has successfully passed access control, then as long as the MO IMS registration related signalling is ongoing, the following access attempts are allowed to proceed without further access control checking in order to avoid double barring:

1) any service request procedure related to the PDU session established for DNN = "IMS" and for the DNN used for SMSoIP, if the upper layers have indicated a DNN used for SMSoIP and the indicated DNN used for SMSoIP is different from "IMS", except between receiving from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access categories except category 0 and receiving from the lower layers an indication that the barring is alleviated for the access category determined for the access attempt; and

2) any uplink user data packet to be sent for a PDU session with suspended user-plane resources established for DNN = "IMS" and for the DNN used for SMSoIP except between receiving from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access categories except category 0 and receiving from the lower layers an indication that the barring is alleviated for the access category determined for the access attempt;

While an MMTEL voice call is ongoing:

- any service request procedure related to the PDU session established for DNN = "IMS" is mapped to access category 4;

- any uplink user data packet to be sent for a PDU session with suspended user-plane resources established for DNN = "IMS" is mapped to access category 4; and

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode or 5GMM-IDLE mode with suspend indication for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclause 5.3.1.2 and 5.3.1.4) is mapped to access category 4.

While an MMTEL video call is ongoing and no MMTEL voice call is ongoing:

- any service request procedure related to the PDU session established for DNN = "IMS" is mapped to access category 5;

- any uplink user data packet to be sent for a PDU session with suspended user-plane resources established for DNN = "IMS" is mapped to access category 5; and

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode or 5GMM-IDLE mode with suspend indication for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclause 5.3.1.2 and 5.3.1.4) is mapped to access category 5.

While an SMSoIP is ongoing, no MMTEL video call is ongoing and no MMTEL voice call is ongoing:

- any service request procedure related to the PDU session established:

1) for DNN = "IMS"; or

2) for the DNN used for SMSoIP, if the upper layers have indicated a DNN used for SMSoIP and the indicated DNN used for SMSoIP is different from "IMS";

is mapped to access category 6; and

- any uplink user data packet to be sent for a PDU session with suspended user-plane resources established:

1) for DNN = "IMS"; or

2) for the DNN used for SMSoIP, if the upper layers have indicated a DNN used for SMSoIP and the indicated DNN used for SMSoIP is different from "IMS";

is mapped to access category 6; and

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode or 5GMM-IDLE mode with suspend indication for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclause 5.3.1.2 and 5.3.1.4) is mapped to access category 6.

While an MO IMS registration related signalling is ongoing, no SMSoIP is ongoing, no MMTEL video call is ongoing and no MMTEL voice call is ongoing:

- any service request procedure related to the PDU session established:

1) for DNN = "IMS"; and

2) for the DNN used for SMSoIP, if the upper layers have indicated a DNN used for SMSoIP and the indicated DNN used for SMSoIP is different from "IMS";

is mapped to access category 9; and

- any uplink user data packet to be sent for a PDU session with suspended user-plane resources established:

1) for DNN = "IMS"; and

2) for the DNN used for SMSoIP, if the upper layers have indicated a DNN used for SMSoIP and the indicated DNN used for SMSoIP is different from "IMS";

is mapped to access category 9; and

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclause 5.3.1.2 and 5.3.1.4) is mapped to access category 9.

While an SMS over NAS is ongoing, no SMSoIP is ongoing, no MO IMS registration related signalling is ongoing, no MMTEL video call is ongoing and no MMTEL voice call is ongoing:

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode or 5GMM-IDLE mode with suspend indication for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclause 5.3.1.2 and 5.3.1.4) is mapped to access category 6.

While a 5GC-MO-LR procedure is ongoing, no SMS over NAS is ongoing, no SMSoIP is ongoing, no MO IMS registration related signalling is ongoing, no MMTEL video call is ongoing, and no MMTEL voice call is ongoing:

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode or 5GMM-IDLE mode with suspend indication for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclauses 5.3.1.2 and 5.3.1.4) is mapped to access category 3.

While a UE triggered V2X policy provisioning procedure or a UE triggered ProSe policy provisioning procedure is ongoing, no 5GC-MO-LR procedure is ongoing, no SMS over NAS is ongoing, no SMSoIP is ongoing, no MMTEL video call is ongoing, and no MMTEL voice call is ongoing:

- any:

1) service request procedure; or

2) registration procedure;

initiated in 5GMM-IDLE mode for the purpose of NAS signalling connection recovery or following a fallback indication from the lower layers (see subclauses 5.3.1.2 and 5.3.1.4) is mapped to access category 3.

While CIoT user data transfer over the control plane is ongoing, no 5GC-MO-LR procedure is ongoing, no SMS over NAS is ongoing, no SMSoIP is ongoing, no MMTEL video call is ongoing, and no MMTEL voice call is ongoing, any service request procedure initiated in 5GMM-IDLE mode following a fallback indication from the lower layers (see subclause 5.3.1.4) is mapped to access category 7.

NOTE 3: Although the access control checking is skipped, the mapping is performed in order to derive an RRC establishment cause.

If an access category is determined and the access control checking is skipped, the NAS shall determine the RRC establishment cause from one or more determined access identities and the access category as specified in subclause 4.5.6, the NAS shall initiate the procedure to send the initial NAS message for the access attempt and shall provide the RRC establishment cause to lower layers.

If the UE receives from the lower layers an indication that access barring is applicable for all access categories except categories 0 and 2, or access barring is applicable for all access categories except category 0:

a) if an MMTEL voice call or MMTEL video call is ongoing:

1) if the UE is operating in the single-registration mode and the UE's usage setting is "voice centric", the UE may attempt to select an E-UTRA cell connected to EPC. If the UE finds a suitable E-UTRA cell connected to EPC, it then proceeds with the appropriate EMM specific procedures and, if necessary, ESM procedures to make a PDN connection providing access to IMS available; see subclause 4.8.2 and 3GPP TS 24.301 [15]; and

2) if the UE is operating in the dual-registration mode, the UE may proceed in S1 mode with the appropriate EMM specific procedures and ESM procedures to make a PDN connection providing access to IMS available; see subclause 4.8.3 and 3GPP TS 24.301 [15]; and

b) if SMSoIP is ongoing or an MO IMS registration related signalling is ongoing:

1) if the UE is operating in the single-registration mode, the UE may attempt to select an E-UTRA cell connected to EPC. If the UE finds a suitable E-UTRA cell connected to EPC, it then proceeds with the appropriate EMM specific procedures and, if necessary, ESM procedures to make a PDN connection providing access to IMS available; see subclause 4.8.2 and 3GPP TS 24.301 [15]; and

2) if the UE is operating in the dual-registration mode, the UE may proceed in S1 mode with the appropriate EMM specific procedures and ESM procedures to make a PDN connection providing access to IMS available; see subclause 4.8.3 and 3GPP TS 24.301 [15].

\*\*\*\*\* end of 3rd change \*\*\*\*\*