**3GPP TSG-RAN WG2 Meeting #116bis-e *R2-22xxxx***

**Electronic, 17 – 25 Jan, 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **36.304** | **CR** | **CRNum** | **rev** | **-** | **Current version:** | **16.6.0** |  |
|  |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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|  |
| ***Title:***  | Introduction of MINT |
|  |  |
| ***Source to WG:*** | Ericsson, Lenovo, Motorola Mobility |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | TEI17 [MINT] |  | ***Date:*** | 2022-01-20 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | CT1 is specifying a feature referred to as MINT. This feature is about PLMNs which experiencing outage during disasters. This feature allows UEs of PLMN which is experiencing so called "disaster conditions" to roam in other networks. Such type of roaming is called disaster roaming.Two aspects of this feature impacts RAN2. Namely:1. **Provision of disaster roaming information**: A network should be able to indicate which PLMNs' UEs are allowed to do disaster roaming.
2. **UAC for disaster roaming UEs**: A network should be able to bar UEs doing disaster roaming more aggresively than non-disaster roaming UEs. A UE that is doing disaster roaming will be applying Access Identity 3.

It should be clarified in the functional division between AS and NAS how the UE handles the disaster roaming information. |
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| ***Summary of change:*** | Captured that AS forwards disaster roaming information to NAS and NAS maintains this information. |
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| ***Consequences if not approved:*** | MINT is not supported in 36.304. |
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| ***Clauses affected:*** | 4.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **N** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **N** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** | Potential impact to clause 5.3.1 is TBD |
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| ***This CR's revision history:*** |  |

## 4.2 Functional division between AS and NAS in Idle mode

Table 1 presents the functional division between UE non-access stratum (NAS) and UE access stratum (AS) in idle mode. The NAS part is specified in TS 23.122 [5] and the AS part in the present document.

| Idle Mode Process | UE Non-Access Stratum | UE Access Stratum |
| --- | --- | --- |
| PLMN Selection  | Maintain a list of PLMNs in priority order according to TS 23.122 [5]. Select a PLMN using automatic or manual mode as specified in TS 23.122 [5] and request AS to select a cell belonging to this PLMN. For each PLMN, associated RAT(s) may be set.Evaluate reports of available PLMNs and, for E-UTRA if the UEs supports E-UTRA connected to 5GC, CN type(s) from AS for PLMN selection.Maintain a list of equivalent PLMN identities.Maintain applicable disaster roaming information for available PLMNs including potential disaster PLMNs for available PLMNs. | Search for available PLMNs.If associated RAT(s) is (are) set for the PLMN, search in this (these) RAT(s) and other RAT(s) for that PLMN as specified in TS 23.122 [5].Perform measurements to support PLMN selection.Synchronise to a broadcast channel to identify found PLMNs (and CN type(s).Report available PLMNs with associated RAT(s) and, for E-UTRA if the UE supports E-UTRA connected to 5GC, CN type(s) to NAS on request from NAS or autonomously.Report applicable disaster roaming information for available PLMNs autonomously including potential disaster PLMNs. |
| Cell Selection | Control cell selection for example by indicating RAT(s) associated with the selected PLMN to be used initially in the search of a cell in the cell selection. NAS is also maintaining lists of forbidden registration areas and a list of CSG IDs and their associated PLMN ID on which the UE is allowed (CSG whitelist) and provide these lists to AS.NAS may indicate whether the use of coverage enhancements is not authorized for the selected PLMN.NAS may indicate whether the CE mode B is restricted for the UE supporting CE mode B.For E-UTRA if the UE supports E-UTRA connected to 5GC, NAS indicates the CN type to be used for the selected cell. | Perform measurements needed to support cell selection.Detect and synchronise to a broadcast channel. Receive and handle broadcast information. Forward NAS system information to NAS.Search for a suitable cell. The cells broadcast one or more 'PLMN identity' in the system information. Respond to NAS whether such cell is found or not.If associated RATs is (are) set for the PLMN, perform the search in this (these) RAT(s) and other RATs for that PLMN as specified in TS 23.122 [5].If such a cell is found, the cell is selected to camp on.For E-UTRA if the UE supports E-UTRA connected to 5GC, AS reports the CN type(s) for which the selected cell is suitable to NAS. |
| Cell Reselection | Control cell reselection by for example, maintaining lists of forbidden registration areas.Maintain a list of equivalent PLMN identities and provide the list to AS.Maintain a list of forbidden registration areas and provide the list to AS.Maintain a list of CSG IDs and their associated PLMN ID on which the UE is allowed (CSG whitelist) to camp and provide the list to AS.For E-UTRA if the UE supports E-UTRA connected to 5GC, NAS indicates the CN type to be used for the selected cell. | Perform measurements needed to support cell reselection.Detect and synchronise to a broadcast channel. Receive and handle broadcast information. Forward NAS system information to NAS.Change cell if a more suitable cell is found.For E-UTRA if the UE supports E-UTRA connected to 5GC, the UE reports the CN type(s) for which the selected cell is suitable to NAS. |
| Location registration | Register the UE as active after power on.Register the UE's presence in a registration area, for instance regularly or when entering a new tracking area.Maintain lists of forbidden registration areas.Deregister UE when shutting down.Control and restrict location registration for a UE in eCall only mode. | Report registration area information to NAS. |
| Support for manual CSG selection | Provide request to search for available CSGs.Evaluate reports of available CSGs from AS for CSG selection.Select a CSG and request AS to select a cell belonging to this CSG. | Search for cells with a CSG ID.Read the HNB name from BCCH on SIB9 if a cell with a CSG ID is found.Report CSG ID of the found cell broadcasting a CSG ID together with the HNB name and PLMN(s) to NAS.On selection of a CSG by NAS, select any cell belonging to the selected CSG fulfilling the cell selection criteria and not barred or reserved for operator use for UEs not belonging to AC 11 or 15 and give an indication to NAS that access is possible (for the registration procedure). |
| RAN Notification Area Update | Not applicable | Register the UE's presence in a RAN-based notification area, periodically or when entering a new RAN-based notification area. |

Table 4.2-1: Functional division between AS and NAS in idle mode