**3GPP TSG-CT WG1 Meeting #133e-bisC1-22xxxx**

**E-meeting, 17-21 January 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **23.122** | **CR** | **0876** | **rev** | **2** | **Current version:** | **17.5.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Clarification on the applicability of MINT in a CAG cell. |
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| ***Source to WG:*** | Huawei, HiSilicon, Ericsson |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | MINT |  | ***Date:*** | 2022-01-10 |
|  |  |  |  |  |
| ***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 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:*** | MINT is not applicable for CAG cells ( not in CAG information list) as clarified by SA1 in the LS S1-211323*On following question from CT1:****Question:*** *When a CAG-supporting UE determines that Disaster Condition applies, and a PLMN can provide disaster roaming to the UE, is the UE without CAG configuration for the PLMN allowed to select and register on a CAG cell of the PLMN?**SA1’s answer is:****Answer:*** *No.**Current CAG restrictions apply also during disaster conditions and roaming. As such, a UE without CAG configuration for a PLMN (even if it can provide disaster roaming) is not allowed to select and register on a CAG cell of that PLMN.*Since the PLMNs that offer MINT functionality are forbidden PLMNs, there will not be any entry for the PLMN in the CAG information list and so CAG cells cannot be used for disaster roaming services.But after the UE registers on to the PLMN that provides disaster roaming services, it is possible that the PLMN can configure the UE with a ‘Allowed CAG list’ for that PLMN. In that case, UE can use the CAG cell for MINT functionality.So UE shall ignore any such CAG cell for camping before the CAG configuration list is received by the UE from the PLMN that supports disaster roaming.This needs to be clarified in the specification as it is not captured. |
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| ***Summary of change:*** | It is clarified that only if one of the CAG ID(s) broadcasted by a CAG cell is present in the ‘allowed CAG list’ for the PLMN that supports disaster roaming, then UE can access CAG cell for disaster roaming services. |
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| ***Consequences if not approved:*** | No clarity in any specifications about the support for MINT in CAG cell. UE may wrongly try to access a CAG cell for disaster roaming functionality. |
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| ***Clauses affected:*** | 3.10 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* First Change \* \* \* \*

## 3.10 Minimization of service interruption

The MS may support Minimization of service interruption (MINT).

MINT is not applicable in SNPNs.

For a PLMN that provides disaster roaming services, if one of the CAG ID(s) broadcasted by a CAG cell for the PLMN is present in the "Allowed CAG list" included in the entry for the PLMN in the "CAG information list", then the UE may attempt to access the PLMN on the CAG cell for disaster roaming services.

If the MS supports MINT, the MS can be provisioned by the network with:

a) an indication of whether disaster roaming is enabled in the UE, provided by the HPLMN;

b) a "list of PLMN(s) to be used in disaster condition" provided by the HPLMN, consisting of zero or more entries, each containing a PLMN ID. The PLMNs are listed in order of decreasing priority, with the first PLMN being the highest priority PLMN;

c) one or more "lists of PLMN(s) to be used in disaster condition" provided by a VPLMN, consisting of zero or more entries, each containing a PLMN ID. The PLMNs are listed in order of decreasing priority, with the first PLMN being the highest priority PLMN;

d) a disaster roaming wait range consisting of a minimum wait time and a maximum wait time; and

e) a disaster return wait range consisting of a minimum wait time and a maximum wait time.

Editor's note (WI MINT, CR#0788): It is FFS whether the HPLMN can control whether the UE uses the "lists of PLMN(s) to be used in disaster condition" provided by VPLMNs.

The network may provide the "list of PLMN(s) to be used in disaster condition", the disaster roaming wait range and the disaster return wait range to the UE during a successful registration procedure or a generic UE configuration update procedure.

The indication of whether disaster roaming is enabled in the UE, the disaster roaming wait range and the disaster return wait range provisioned by the network are stored in the non-volatile memory of the ME, as specified in 3GPP TS 24.501 [64] annex C.

In addition, the MS can also be pre-configured with an indication of whether disaster roaming is enabled in the UE, a disaster roaming wait range and a disaster return wait range stored in the USIM (see 3GPP TS 31.102 [40]).

Editor's note (WI MINT, CR#0742): The encoding of the indication of whether disaster roaming is enabled in the UE, of the disaster roaming wait range and of the disaster return wait range in the USIM needs to be specified by CT6.

3GPP TS 24.501 [64] annex C specifies the conditions under which the indication of whether disaster roaming is enabled in the UE, the one or more "lists of PLMN(s) to be used in disaster condition", the disaster roaming wait range and the disaster return wait range stored in the ME are deleted. Additionally:

a) when a USIM is inserted:

1) if:

i) no indication of whether disaster roaming is enabled in the UE is stored in the non-volatile memory of the ME; or

ii) the SUPI from the USIM does not match the SUPI stored together with the indication of whether disaster roaming is enabled in the UE in the non-volatile memory of the ME;

 and the MS has an indication of whether disaster roaming is enabled in the UE stored in the USIM (see 3GPP TS 31.102 [22]), the MS shall store the indication of whether disaster roaming is enabled in the UE from the USIM into the ME, as specified in 3GPP TS 24.501 [64] annex C;

2) if:

i) no disaster roaming wait range is stored in the non-volatile memory of the ME; or

ii) the SUPI from the USIM does not match the SUPI stored together with the disaster roaming wait range in the non-volatile memory of the ME;

 and the MS has a disaster roaming wait range stored in the USIM (see 3GPP TS 31.102 [22]), the MS shall store the disaster roaming wait range from the USIM into the ME, as specified in 3GPP TS 24.501 [64] annex C; and

3) if:

i) no disaster return wait range is stored in the non-volatile memory of the ME; or

ii) the SUPI from the USIM does not match the SUPI stored together with the disaster return wait range in the non-volatile memory of the ME;

 and the MS has a disaster return wait range stored in the USIM (see 3GPP TS 31.102 [22]), the MS shall store the disaster return wait range from the USIM into the ME, as specified in 3GPP TS 24.501 [64] annex C; and

b) when the ME receives a USAT REFRESH command indicating that:

1) the indication of whether disaster roaming is enabled in the UE stored in the USIM has been updated, the MS shall store the indication of whether disaster roaming is enabled in the UE from the USIM into the ME, as specified in 3GPP TS 24.501 [64] annex C;

2) the disaster roaming wait range stored in the USIM has been updated, the MS shall store the disaster roaming wait range from the USIM into the ME, as specified in 3GPP TS 24.501 [64] annex C; or

3) the disaster return wait range stored in the USIM has been updated, the MS shall store the disaster return wait range from the USIM into the ME, as specified in 3GPP TS 24.501 [64] annex C.

NOTE 1: The MS ignores the indication of whether disaster roaming is enabled in the UE stored in the USIM except when the USIM is inserted or when the ME receives a USAT REFRESH command indicating that the indication of whether disaster roaming is enabled in the UE stored in the USIM has been updated.

NOTE 2: The MS ignores the disaster roaming wait range stored in the USIM except when the USIM is inserted or when the ME receives a USAT REFRESH command indicating that the disaster roaming wait range stored in the USIM has been updated.

NOTE 3: The MS ignores the disaster return wait range stored in the USIM except when the USIM is inserted or when the ME receives a USAT REFRESH command indicating that the disaster return wait range stored in the USIM has been updated.

If the MS does not have an indication of whether disaster roaming is enabled in the UE stored in the ME, or the indication of whether disaster roaming is enabled in the UE stored in the ME is set to "Disaster roaming is disabled in the UE", disaster roaming is disabled at the MS. In this case, the MS shall not perform disaster roaming.

Upon selecting a PLMN for disaster roaming, if there is a disaster roaming wait range stored in the ME, the MS shall generate a random number within the disaster roaming wait range and start a timer set to the generated random number. While the timer is running, the MS shall not initiate registration. Upon expiration of the timer, the MS may initiate registration, if still camped on the selected PLMN.

Upon determining that a disaster condition has ended and selecting the PLMN previously with disaster condition, if there is a disaster return wait range stored in the ME, the MS shall generate a random number within the disaster return wait range and start a timer set to the generated random number. While the timer is running, the MS shall not initiate registration. Upon expiration of the timer, the MS may initiate registration, if still camped on the selected PLMN.

\* \* \* End of Change \* \* \* \*