**3GPP TSG-CT WG1 Meeting #150C1-244515**

**Maastricht, Netherlands, 19-23 August 2024**

**Source: China Telecom**

**Title: New SID on** **MINT support in EPS for 5G-only national roaming UE**

**Document for: Approval**

**Agenda Item: 19.1.1**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Study on MINT support in EPS for 5G-only national roaming UE

Acronym: FS\_MINT\_Ph2

Unique identifier: TBD

Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes | x | x | x | x |  |
| No |  |  |  |  |  |
| Don't know |  |  |  |  | x |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | Study |
|  | Normative – Stage 1 |
|  | Normative – Stage 2 |
|  | Normative – Stage 3 |
|  | Normative – Other\* |

**\* Other = e.g. testing**

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| MINT\_Ph2 | SA1 | 970041 | Minimization of Service Interruption During Core Network Failure Phase2 |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 900004 | Study on the CT aspects of Support for Minimization of service Interruption | Study of MINT phase1 in CT WGs |

**Dependency on non-3GPP (draft) specification:**

# 3 Justification

Based on SA1 R19 MINT\_Ph2, SA1 has agreed the new requirement in TS 22.261 clause 6.31:

*“Subject to regulatory requirements, operator's policy or UE capabilities, the 3GPP system shall be able to support a UE, with 5G-only national roaming access to a VPLMN, to obtain 4G connectivity service from that VPLMN in the area where a Disaster Condition applies.”*

*NOTE: In the above scenario, voice call service is provided by IMS in HPLMN.*

This requirement allows 5G-only national roaming UEs to register for Disaster Roaming service in EPS of the same VPLMN. As a result, the 4G system shall be able to provide Disaster Roaming service. It is valuable to further evaluate and provide solution to fulfil the above SA1 requirement.

Additionally, it could be a valid network deployment that the operator deploys 5G system and 4G system with different PLMN IDs to ensure that 5G-only national roaming UEs cannot access 4G in normal conditions. When 5G is in the disaster condition, 5G-only national roaming UEs can select the 4G of the same operator from the forbidden list to register for Disaster Roaming service.

As determined in TSG #104, TSG SA recommended CT1 that the study on MINT\_Ph2 needs to be done first before required normative work is progressed. So this study item will investigate the necessary stage 2 requirements and stage 3 implementations for the stage 1 requirements in MINT\_Ph2.

# 4 Objective

The objectives of this SI are to investigate the stage 2 and the stage 3 aspects for service requirements defined by SA WG1 under their work item MINT\_Ph2.

CT1 investigates stage-2 and NAS related stage-3 functionalities:

- Study on enabling a UE to obtain connectivity service from 4G PLMN(s) in a forbidden PLMN list when a Disaster Condition applies to the serving 5G PLMN, including:

- Study how a UE can be aware of the failure of a 5G PLMN when the Disaster condition applies;

- Study how a UE can obtain information of particular 4G PLMN(s) when the Disaster Condition applies;

- Study how roaming 4G PLMN(s) can be provisioned of the area where the Disaster Condition applies;

- Study how roaming 4G PLMN(s) can determine and indicate to potential Disaster Inbound Roamers whether they can access the PLMN or not;

- Study how a UE and roaming 4G PLMN(s) can be aware of the recovery of a 5G PLMN used to be in the Disaster Condition and how the UE can return to 5GS;

- Study how a UE can access 4G PLMNs in a forbidden PLMN list if the Disaster condition applies;

- Study how to minimize the congestion caused by the Disaster Roaming when the Disaster condition applies and is no longer applicable.

Disaster roaming in case of 5G RAN failure between 5GS and EPS is in the scope for this study but limited to 4G/EPS only without CS domain. EPS to EPS disaster roaming is out of scope of this study.

NOTE 1: The conclusion of the study needs further feedback from SA2 before CT1 concluding the final impact.

NOTE 2: The existing mechanisms defined for Rel-17 MINT should be reused for this study as far as possible.

NOTE 3: The existing Rel-17 MINT is unchanged.

NOTE 4: The Disaster condition only applies to 5G RAN failure.

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications {One line per specification. Create/delete lines as needed} | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
| Internal TR | 24.xxx | Study on MINT support in EPS for 5G-only national roaming UE | CT#106 (December 2024) | CT#107 (March 2025) | Li Mingxue, China Telecom, limx36@chinatelecom.cn |
|  |  |  |  |  |  |

# 6 Work item Rapporteur(s)

Li Mingxue, China Telecom (limx36@chinatelecom.cn)

# 7 Work item leadership

CT1

# 8 Aspects that involve other WGs

RAN2 for the potential updates of SIB information

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| China Telecom |
| vivo |
| Huawei |
| HiSilicon |
| CATT |
| ZTE |
| Interdigital |
| China Unicom |
| Nokia |
| Nokia Shanghai Bell |