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

**E-meeting, 19-27 Aug 2021 *was C1-214442***

**3GPP TSG-CT WG6 Meeting #107e C6-210abc**

**E-Meeting, 24th – 27th August 2021**

**Source: China Telecom, Huawei, HiSilicon，Qualcomm Incorporated**

**Title: New WID on IMS voice service support and network usability guarantee for UE’s E-UTRA capability disabled scenario in 5GS**

**Document for: Approval**

**Agenda Item: 17.1.1**

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: New WID on IMS voice service support and network usability guarantee for UE’s E-UTRA capability disabled scenario in SA 5GS

## Acronym: ING\_5GS

## Unique identifier: TBD

Potential target Release: Rel-17.

## 1 Impacts

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

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

This work item is a Feature *.*

|  |  |
| --- | --- |
| x | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
|  |  | *{optional free text}*  |

## 3 Justification

It has been observed in the field that, for a standalone (SA) 5G network which only relies on EPS fallback for IMS voice service, once a UE has disabled its E-UTRA capability for some reasons (see subclause 4.5 in TS 24.301) then moves to 5GS, all the IMS voice calls in the 5GS will fail as the EPS fallback cannot be performed due to the UE’s E-UTRA capability being disabled. The situation gets worse since the UE does not know the failure reasons. The UE may re-attempt to initiate the IMS voice call in the current network while still keeping its E-UTRA capability disabled. Such kind of IMS voice failure has already happened in real deployments and needs to be solved in specifications.

The above problem has been discussed in SA WG2 meeting #143-e. In order to solve the problem for the legacy UEs, a network-based solution was approved through S2-2101055 at the expense of 5G network usability, since the AMF will indicate that the IMS voice over PS session over 3GPP access is not supported once the UE disables its E-UTRA capability, which leads the voice-centric UEs to leave the 5G network and move to 2G/3G. Given the dismantling of 2G/3G, if a network does not support 2G/3G, and there is no other network available around either, the UE will completely lose the network connection.

It is valuable to further evaluate and provide solutions for the above problem to prevent the voice-centric UEs from completely losing network connection when the current network does not support 2G/3G. Therefore, a CT work item is proposed to develop the stage-3 solution without system-level impacts which not only resolves the IMS voice call failure problem, but also guarantees the 5G network usability.

## 4 Objective

This work item is to provide an option for the operators to implement and use.

For CT1, the expected work includes:

* Evaluating and defining the conditions in which the 5G UE can maintain or re-enable the E-UTRA capability, if necessary.
* Defining the handling of T3402 which allows the UE to reselect from 5GS to EPS or be handed over/redirected from 5GS to EPS by the network.

For CT6, the expected work includes:

 - Potential impact due to the UE configuration parameter stored in the USIM to enable/disable the new UE behaviour.

## 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 |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 24.301 | 1. Evaluating and defining the conditions in which the 5G UE can maintain or re-enable the E-UTRA capability, if necessary.
2. Defining the handling of T3402 which allows the UE to reselect from 5GS to EPS or be handed over/redirected from 5GS to EPS by the network.
 | CT#94 (December 2021) | CT1 responsibility |
| 24.368 | Potential impact due to the UE configuration parameter stored in the ME to enable/disable the new UE behaviour. | CT#94 (December 2021) | CT1 responsibility |
| 31.102 | Potential impact due to the UE configuration parameter stored in the USIM to enable/disable the new UE behaviour. | CT#94 (December 2021) | CT6 responsibility |
| 24.501 | Evaluating and defining the conditions in which the 5G UE can maintain or re-enable the E-UTRA capability, if necessary. | CT#94 (December 2021) | CT1 responsibility |

## 6 Work item Rapporteur(s)

Mingxue Li, China Telecom, limx36@chinatelecom.cn

## 7 Work item leadership

CT WG1

## 8 Aspects that involve other WGs

None

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| China Telecom |
| Huawei |
| HiSilicon |
| Qualcomm Incorporated |
| vivo |
| ZTE |
| China Unicom  |
| Telstra |
| CATT |