**3GPP TSG-CT WG1 Meeting #134-eC1-221384**

**E-Meeting, 17th – 25th February 2022 Revision of C1-216823**

**3GPP TSG-CT WG4 Meeting #108-eC4-221410**

**E-Meeting, 17th – 25th February 2022 Revision of C4-216112**

**Source: China Mobile**

**Title: New WID on CT aspects of enhancement of RAN Slicing for NR**

**Document for: Approval**

**Agenda Item: 17.1.1 (CT1) / 5 (CT4)**

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: CT aspects of enhancement of RAN Slicing for NR

## Acronym: NR\_Slice-Core

## Unique identifier: TBD

Potential target Release: Rel-17

## 1 Impacts

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

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

### 2.1 Primary classification

|  |  |
| --- | --- |
|  | Feature |
| X | 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) |
| NR\_Slice-Core | RAN2 | 911107 | Core part: Enhancement of RAN slicing for NR |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
| 860039 | Study on enhancement of RAN slicing for NR | RAN work item |

## 3 Justification

RAN2 and RAN3 carried out a Rel-17 study item on the enhancement of RAN Slicing for NR. The analysis and conclusions for scenarios, key issues and candidate solutions are captured in TR 38.832. The RAN2 part of the study was completed in Q1 2021 with a conclusion that both slice based cell reselection and RACH configuration are recommended for normative work.

TSG RAN has approved work item "Core part: Enhancement of RAN slicing for NR (NR\_Slice-Core)" in TSG RAN Meeting #91(March 2021) to standardize the enhancement on RAN support of network slicing. And "LS on Slice list and priority information for cell reselection" ( R2-2108928) from RAN2 to CT1 points out the solution agreed in RAN2#114e and #115e for cell reselection for the normative phase has the following impacts on NAS protocol:

1. For the *List of Slices with Slice Priority*, UE Access Stratum (AS) expects to receive a list from NAS containing a slice priority for each of the slices contained in the list when/ before it moves to RRC\_IDLE/RRC\_INACTIVE and when the list and/or priorities changes while the UE is in RRC\_IDLE/RRC\_INACTIVE.
2. Furthermore, RAN2 has been discussing a Slice Group concept, where a slice group consists of one or multiple slices, one slice belongs to one and only one slice group and each slice group is uniquely identified by a slice group identifier. This can avoid publishing slice identities (S-NSSAI) in System Information (security concern and SI size concern).

The LSs between SA2/RAN2/RAN3 shows RAN2 confirms:

* A slice can be associated to none or only one slice group;
* The granularities of the slice groups are per TA;
* Both registered slices and not yet registered slices can be considered for the slice priority;

and expects SA2/RAN3/CT1 to take into account "Mapping between slice and slice group should be consistent between serving cell and UE, in order to avoid misunderstanding of system information" for future work.

The following issues can be known from RAN2 confirmations:

* AS layer needs to know the mapping between slice and slice group beforehand;
* The slice group information needs to be provided to the UE in TA granularity;
* Not all slices allowed in a RA have a slice group ID.

Considering the above, impacts on protocols and interfaces under CT WGs' responsibilities are foreseen and the related work in CT WGs should be carried out within Rel-17.

## 4 Objective

The objective of the work item is to develop the specifications according to the slice based cell reselection requirements from RAN WGs work item NR\_Slice-Core. The following areas of work are expected to be covered (non-exhaustive):

**CT1**

1. Enhancement of the NAS protocol to support the slice based cell reselection.
2. Clarification of the related interaction between the NAS and AS layers.

**CT4**

1. Potential update of the slices information in the subscription data for a UE to support the slice based cell reselection.
2. Potential update of UDR and UDM service to deliver the new slices information in the subscription data for a UE to support the slice based cell reselection.

## 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 |
| 24.501 | Enhancement of the NAS protocol to support the slice based cell reselection. | TSG#95(Mar. 2022) | CT1 |
| 23.122 | Clarification of the related interaction between the NAS and AS layers. | TSG#95(Mar. 2022) | CT1 |
| 29.503 | Potential update of UDM service to deliver the new slices information in the subscription data for a UE to support the slice based cell reselection. | TSG#95(Mar. 2022) | CT4 |
| 29.504 | Potential update of UDR service to deliver the new slices information in the subscription data for a UE to support the slice based cell reselection. | TSG#95(Mar. 2022) | CT4 |
| 29.505 | Potential update of the slices information in the subscription data for a UE to support the slice based cell reselection. | TSG#95(Mar. 2022) | CT4 |

## 6 Work item Rapporteur(s)

Chen Xu, China Mobile, chenxu@chinamobile.com

## 7 Work item leadership

CT1

## 8 Aspects that involve other WGs

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| China Mobile |
| ZTE |
| Huawei |
| HiSilicon |
| vivo |
| CATT |
| China Telecom |
| OPPO |
| Xiaomi |
| Ericsson |
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