**3GPP TSG-RAN WG2 Meeting #113 electronic R2-20xxxxx**

**Online, Jan 25th – Feb 5th, 2021**

**Agenda Item:**  **XX.XX.XX**

**Source: CMCC**

**Title:** **Report of [Post112-e][253][RAN slicing] Prioritized solutions for RAN slicing**

**Document for: Discussion and Decision**

## 1 Introduction

After RAN2#112-e meeting, based on the chair notes [1][2], the following email discussion was agreed:

* **[Post112-e][253][RAN slicing] Prioritized solutions for RAN slicing (CMCC)**

Scope: Discuss the potential solutions for slice-based cell reselection and slice-based RACH configuration based on agreements on candidate solutions. Collect company views on schemes that should be prioritized with analysis on benefits and complexity for each solution.

 Intended outcome: Discussion report including TP to the TR 38.832

 Deadline: Dec 16

This email discussion is to progress on solutions for RAN slicing.

Since upload announcement is not mandatory required, indicating contact person is helpful in case companies would like to offline.

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## 2 Slice based cell reselection under network control

### 2.1 RAN2#112-e agreements

Here are the relevant agreements made at RAN2#112-e meeting [2]:

Agreements

* 5.1: These issues will be studied in this SI:
Issue 1: The UE is unaware of the slices supported on different cells or frequencies, which prevents UE from (re)select to the cell or frequency supporting the intended slice.
Issue 2: Dedicated priorities would not be available to the UE prior to first RRC connection establishment and only remain valid before T320 expires upon entering IDLE mode. In addition, dedicated priorities are discarded each time when UE entering CONNECTED mode and need to be configured again before UE leaving CONNECTED mode.
Issue 3: Operator may require different frequency priority configurations for the specific slice in different areas, however the dedicated priority always overwrites the broadcast priorities if configured.
Issue 4: If the serving cell is unable to support the requested slices for the subsequent access of the UE, the serving cell may bring on handover or rejection of access request. That may increase control plane signalling overhead as well as long control plane latency for the UE to access the network.
* 7: The following solution approaches are captured in the TR and will be studied in this SI:
Solution 1: Legacy dedicated priority via RRCRelease message.
Solution 2: Rel-15 mechanisms such as HO, CA, DC and redirection can be used to access the intended slice in different cell
Solution 3: Slice related cell selection info, the slice info of serving cell and neighboring cells is provided in the system information or RRCRelease message. FFS: what information is broadcast.
Solution 4: Slice related cell reselection info (e.g. Cell reselection priority per slice), the slice info of neighboring cells is provided in the system information or RRCRelease message. FFS: what information is broadcast.

Please note that the solution number is changed to align with the solution number in draft TR 38.832.

### 2.2 Discussions on solutions

Based on the scope of this email discussion, the following tables are provided for collecting companies’ comments. The suggestions are as below:

* For benefit, it is suggested to focus on the agreed issues that each solution can solve. For complexity, it is suggested to focus on general impacts on specifications
* Companies can refer to submitted Tdocs for analysis, e.g. submitted at RAN2#112-e meeting, and it may save the size of this email discussion
* For solution details, if needed, it is suggested to only figure out key aspects of a solution but not all details

The above suggestions are also applied to section 3.2.

**Solution 1: Legacy dedicated priority via *RRCRelease* message.**

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| **Company** | **Preferred (Yes/No)** | **Benefits** **(Please list the issue(s) that this solution can address)** | **Complexity** |
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**Solution 2: Rel-15 mechanisms such as HO, CA, DC and redirection can be used to access the intended slice in different cell.**

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| **Company** | **Preferred (Yes/No)** | **Benefits** **(Please list the issue(s) that this solution can address)** | **Complexity** |
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**Solution 3: Slice related cell selection info, the slice info of serving cell and neighboring cells is provided in the system information or *RRCRelease* message. FFS: what information is broadcast.**

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| **Company** | **Preferred (Yes/No)** | **Benefits** **(Please list the issue(s) that this solution can address)** | **Complexity** |
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**Solution 4: Slice related cell reselection info (e.g. Cell reselection priority per slice), the slice info of neighboring cells is provided in the system information or *RRCRelease* message. FFS: what information is broadcast.**

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| **Company** | **Preferred (Yes/No)** | **Benefits** **(Please list the issue(s) that this solution can address)** | **Complexity** |
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## 3 Slice based RACH configuration

### 3.1 RAN2#112-e agreements

Here are the relevant agreements made at RAN2#112-e meeting [2]:

Agreements

* 10: The intentions and use cases for slice-based RACH configuration are as follows:
Intention 1: RA resource isolation. From marketing point of view, some of the industrial customers have the requirement for access resource isolation, in order to provide guaranteed RA resources for their sensitive slices.
Intention 2: Slice access prioritization. In R15/16, all slices are sharing the same RA resources and cannot be differentiated by network side. But some slices may need to be prioritized during the RA procedure.
* 11: The following solutions will be studied and captured in the TR 38.832:
Solution 1: Slice-specific separate RACH resources pool can be configured per slice or per slice group, in addition to the existing common RACH resources.
Solution 2: Slice-specific RACH parameters prioritization can be configured per slice or per slice group.
Neither solution may not be applicable to all possible slices.

### 3.2 Discussions on solutions

Same suggestions as section 2.2. Please companies provide the comments into the following tables if any.

**Solution 1: Slice-specific separate RACH resources pool can be configured per slice or per slice group, in addition to the existing common RACH resources.**

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| **Company** | **Preferred (Yes/No)** | **Benefits** | **Complexity** |
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**Solution 2: Slice-specific RACH parameters prioritization can be configured per slice or per slice group.**

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| **Company** | **Preferred (Yes/No)** | **Benefits** | **Complexity** |
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## 4 Conclusion

[Note: the conclusion will be made by the email rapporteur, and then draft TP to the TR 38.832 will be provided for further review]

[To be added]

## 5 Reference

1. RAN2 112-e Chairman Notes 2020-11-15 EOM
2. RAN2-112e LTE DCCA Mobility RAN slicing and Multi-SIM (Tero)\_2020-11-13-eom UTC