3GPP TSG-RAN WG3 #114-e R3-215884

**E-meeting, 1 – 11 November 2021**

Source: CATT (moderator)

Title: Summary of CB: # 2005\_NTN\_Country\_Routing

Agenda Item: 20.2.5

Document for: Approval

# Introduction

**CB: # 2005\_NTN\_Country\_Routing**

**- Where should cross-country mobility detection be performed? In RAN? In CN? In both? And how?**

**- Assuming that cross-border mobility can be detected, which actions should be taken?**

**- Should such actions be RNA based? Or CN based? Any other solution?**

(CATT - moderator)

Summary of offline disc [R3-215884](Inbox%5CR3-215884.zip)

# For the Chairman’s Notes

To be updated base on the offline discussion.

# Discussion (1st round)

In the RAN3#113e meeting, there’s an open issue on how to handle the use case “UE moves across the country and the new PLMN of the country is not supported”.

**Continue to discuss whether and how to address the use case “UE moves across the country (within the same cell) and not support the new PLMN of the country”**

**To be continued...**

On how to resolve the issue, several contributions were submitted [1][2][3][4] in RAN3#114e meeting.

**Questions 1: Where should the cross-country mobility detection be performed? And how?**

| Company | Comment |
| --- | --- |
| CATT | **Both NG-RAN and 5GC are able to decide whether UE moves across a country.** From NG-RAN perspective:On how to decide the cross-country mobility, it has been discussed and agreed that:* The UE location information reported from the UE (as specified by RAN2) is accurate enough for AMF (re-)selection.

From 5GC perspective:We assume the 5GC should also able to decide whether UE is across the country via e.g. ULI information provided by NG-RAN (as explained in [2]), or the LCS service, or some other information. |
| Ericsson | We agree with CATT: ULI already today can give this information (i.e. no additional info seems needed on top of current ULI). |
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**Moderator’s summary:**

To be updated later.

From all the contributions [1][2][3][4], NG-RAN behaviours should be specified. Additionally, some AMF behaviours are also proposed in [2], as below:

The information provided to the Core Network within the UE location information may be used by the AMF to determine whether the serving PLMN is allowed to serve the UE in the current location in scenarios where such detection is required. Pre-configuration e.g. of special TAC or mapped cell identifiers may be used to support this functionality.

Base on the contributions, we provide the two options:

* **Option 1:** Only NG-RAN behaviours should be specified.
* **Option 2:** Both NG-RAN and AMF behaviours for should be specified.

**Questions 2: Which option is preferred on handling of the issue identified for country mobility?**

| Company | Comment |
| --- | --- |
| CATT | We slightly prefer the option 1.We understand the AMF behaviours proposed in [2] is correct. However, it seems not necessary to specify that in our RAN spec. |
| Ericsson | Option 1 is more appropriate – we don’t specify AMF behavior in our stage 2. One possibility would be to add the AMF behavior as a note in 16.x.6 of 38.300, e.g. “NOTE: The AMF may decide to trigger UE context release if it determines that the serving PLMN is not allowed to serve the UE in its current location.” |
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**Moderator’s summary:**

To be updated later.

Following the discussion of the Question 2, we would like to further consider the detail TP work as been proposed in the contributions.

On the RAN behaviours, it seems all of the companies are aligned that NG-RAN could release the RRC Connection when it decides the UE moved to a country where the PLMN is not allowed.

**Question 3: Comments or proposals for the TP work?**

| Company | Comment |
| --- | --- |
| CATT | **Following the discussion of Q2, suggest the TP work just focus on the RAN behaviours.**For this use case, if the PLMN of the country is not allowed for the UE, the information should be indicated to NG-RAN in “Mobility Restriction List”. Base on the UE location reporting, NG-RAN decides the UE moves to a country where the serving PLMN is not allowed for the UE (in the same cell).The NG-RAN should initiate UE Context Release Request procedure towards the AMF to release the UE signalling connection, the existing cause value “Handover target not allowed” could be used in this use case. The NG-RAN will release the RRC connection when it receives the UE Context Release Command from the AMF.**Only release the RRC Connection in the Uu interface is not a complete solution, UE Context should also be released in NG-RAN and 5GC via the UE Context Release Request.**Corresponding TP proposed for BL CR for TS 38.300:*For a RRC\_CONNECTED UE, when the NG-RAN node is configured to ensure that the UE is using an AMF that serves the country in which the UE is located:**- If the NG-RAN node detects that the UE is in a different country to that served by the serving AMF, the NG-RAN should perform an NG handover to change to an appropriate AMF.* *- If the NG-RAN node detects the UE is in a country where the corresponding PLMN(s) are not supported by the UE, the NG-RAN should initiate UE Context Release Request towards the AMF.* |
| Ericsson | Agree |
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**Moderator’s summary:**

To be updated later.

# Conclusion, recommendations

To be updated later.

# Reference

1. R3-214836 Country specific routing issue, China Telecommunication
2. R3-214902 (TP for BL CR for 38.300) Final aspects of country border crossing, Qualcomm Incorporated
3. R3-215594 (TP for BL CR for TS 38.300) On country policy handling, CATT
4. R3-215742 Further Discussion on Country-specific Routing for NTN, ZTE