3GPP TSG-RAN WG3 #114bis-e R3-221069

**E-meeting, 17th – 26th January 2022**

Source: CATT (moderator)

Title: Summary of offline discussion for CB: # 2003\_NTN\_Country\_Routing

Agenda Item: 20.2.5

Document for: Approval

# Introduction

**CB: # 2003\_NTN\_Country\_Routing**

**-Should a new cause value be added to notify AMF of a UE context release due to unsuitable serving PLMN?**

**-Can a UE context release due to unsuitable serving PLMN be expressed by means of existing cause values?**

**-Capture agreements and provide TPs if agreeable**

(CATT - moderator)

Summary of offline disc [R3-221069](file:///C:\Users\chuberrn\Documents\Inbox\R3-221069.zip)

The deadline for the first phase is 00:00 UTC on Saturday, January 22.

# For the Chairman’s Notes

**Proposal: Add new cause value “UE not in PLMN serving area” for the NGAP.**

**Proposal: Agree the TP R3-22xxxx for the new cause value.**

**Proposal: send LS to SA2, indicating the RAN decision on the new cause value, and request for further consideration on how to proceed with the new cause value.**

# Discussion (first phase)

All of the TDocs raised this meeting focuses on whether we should introduce a new IE to indicate the requested UE release is due to country policy issue, i.e. the UE is currently outside the serving area of a PLMN.

Five companies preferred to introduce a new cause value dedicated for this scenario [1][2][4][5][6].

One company preferred not to add new cause vaule [3].

**Questions 1**: What is your opinion on whether a new cause value should be introduced?

| Company | Comment |
| --- | --- |
| CATT | We prefer yes, following the majority.  The reason provided in [3] did not seem very arguable. For example, it didn’t even clearly state what legacy cause value should be used and why it wouldn’t incur misunderstanding. |
| Thales | We suggest to follow majority and agree on new cause value |
| Ericsson | It’s not the task of the WG to clarify which cause value shall be used. Normally that’s part of deployment planning.  It seems that both AMF and RAN can independently trigger UE context release due to country policy issue. If so, we need to clarify whether these should be separate actions, i.e. whether a release should be triggered e.g. by the AMF simply by receiving a cause value from e.g. the RAN. |
| Nokia | A new cause value may be beneficial.  Not sure whether this cause other issue. For example, normally (or in current network), AMF should initiate the UE Context Release procedure upon reception of a UE CONTEXT RELEASE REQUEST message. but in this case, the AMF may need to initiate a further location check, or de-registration procedure, rather the UE context release procedure. |
| China Telecom | Prefer yes, a new cause value may be beneficial. |
| Samsung | Yes. A new cause is beneficial. |
| Qualcomm | Although we are proposing a new cause value, we can expand further.  As Nokia points out, we don’t particularly want to trigger the usual flow (Context Release) as this will just result in a new access, so the situation is more complex. We want the UE to be de-registered. So an alternative point of view is that RAN should either not ask for release (i.e. change stage 2 and remove this option), or we need to go further and maybe even add an IE with some specification text. Basically with that IE, the flow changes as the AMF needs to do other work.  Adding a cause value is the minimum change but could be said to be inconsistent with how we use cause values in general; although there are cases e.g. CS fallback where they trigger actions…  But one thing is for sure: the status quo does not work. |
| ZTE | A new cause value is needed. |
| Huawei | Yes. We share the similar view as Nokia and Qualcomm. The idea is want the UE to be de-registered, so it is a more clean procedure. |

**Moderator’s summary:**

9 companies provided the views on introduction of the new cause value. From the companies’ views, it seems it could be agreed that new cause value is needed.

However, as mentioned by Ericsson, Nokia and QC, AMF behaviors may need to be clarified upon reception of the UE Context Release Request with the new cause value, e.g. UE context release or de-registration procedure should be triggered in the AMF? And RAN behaviors should be aligned with core network behaviors.

According to the current situation, the moderator would propose to send an LS to SA2, indicating the RAN decision on the new cause value, and ask them to further consider how to proceed with this case.

The stage 2 texts could be revisited after LS reply our LS.

**Proposal: send LS to SA2, indicating the RAN decision on the new cause value, and request for further consideration on how to proceed with the new cause value in the 5GC.**

**Questions 2**: Any other comment, e.g. the name of the cause value?

| Company | Comment |
| --- | --- |
| CATT | On the name of the new cause value, contributions [2][4][5] provide the same name “UE not in PLMN serving area”, and [1] provide a similar name.  To make life easier, prefer to follow the majorities, add the new cause value with the name “UE not in PLMN serving area”. Corresponding TPs could be merged together. |
| Thales | Ok for “UE not in PLMN serving area” as new cause value name |
| Ericsson | Assuming we clarify the usage scenario as per our comment to the previous question, the name seems appropriate. |
| Nokia | ok for the name, and prefer to add it as a NAS cause value. |
| China Telecom | Fine with “UE not in PLMN serving area”. |
| Samsung | Ok for the name. |
| Qualcomm | Name is fine |
| ZTE | Fine with the name. |
| Huawei | Fine with the name. |

Moderator’s summary:

9/9 companies agree to use the name “UE not in PLMN serving area” for the new added cause value.

**Proposal: Add new cause value “UE not in PLMN serving area” for the NGAP.**

# Discussion (2nd phase)

To further proceed with the work, the moderator would propose:

1. **Revise R3-220714 [4] to add new cause value, the other TPs in [1][2][5][6] are marked as merged. (encourage to co-source) 🡺CATT**
2. **Draft an LS to SA2 to indicate the new cause value is added in N2, and request for further consideration on how to proceed with the new cause value in the 5GC. 🡺Qualcomm**

**Questions 3**: Any view on the moderator’s proposal on the TP work? and the views on the content of the TP?

| Company | Comment |
| --- | --- |
| Qualcomm | OK but then we should send the LS to confirm |
| Ericsson | As also QC pointed out in the previous round, “the situation is more complex” as “we want the UE to be de-registered.” If we add a new cause value, we must capture this somewhere (e.g. st2, sec. 16.x.6: “If the gNB detects that the UE is in a different country to that served by the serving AMF, then it should perform an NG handover to change to an appropriate AMF, or initiate an UE Context Release Request procedure towards the serving AMF with a suitable cause value. The AMF may de-register the UE.”) Without such clarification, adding a dedicated cause value will not help. |
| Huawei | Yes, and agree with QC that we do need to send a LS to confirm whether the new cause value can trigger special procedure (de-registration). We note that this is not a usual case. Usually, cause value is not mandatory, and will not trigger special procedures.. |
| Thales | Agree with TP proposing to add new cause value  Agree with E/// that it has to be captured in stg2 as they suggested.  Agree with previous companies mentioned LS needs to be sent to SA2 to confirm whether the new cause value can trigger special procedure (de-registration) |
| ZTE | Agree with the TP work, and the Stage 2 description by Ericsson could be considered. |

**If it’s agreeable to send the LS to SA2, please provide your views on the content of the draft LS.**

**Questions 4**: Any view on sending LS to SA2?

| Company | Comment |
| --- | --- |
| Qualcomm | We can expand a little on previous comments. The main issue is outlined by Nokia, i.e. unlike normal context release requested by gNB, here the AMF is being triggered to start a series of procedures including potentially LCS and NAS procedures.  So it may be better to LS SA2 to clarify system level operation, but note also that we have no TUs at the next meeting, strictly.  We could fix this in RAN3 by removing the functionality altogether (stage 2 change) or by adding say a new reporting trigger (out of PLMN area) to location reporting control. But even the second one would probably need SA2 confirmation. So overall an LS seems needed. |
| Ericsson | See our previous comment for a suggested st2 clarification of this scenario. |
| Huawei | Yes, as we commented in the previous question, a LS is needed. A stage 2 clarification may also beneficial |
| Thales | Agree to send the LS |
| ZTE | OK to send the LS |

If it’s agreeable to send the LS to SA2, please provide your views on the content of the draft LS.

**Questions 5**: Any view on the content of the draft LS?

| Company | Comment |
| --- | --- |
|  | We should explain that RAN3 agreed in principle that RAN could trigger context release request for out-of-country conditions e.g. where e.g. ULI is not being sent for a while, or RAN has been thus configured. RAN3 then understands that such a request would result in normal release without de-reregistration, and so one option is to add a new cause value to trigger additional actions by the AMF (LCS/NAS dereg etc) before AS release. RAN3 would like to confirm with SA2 that this functionality is useful and could be supported at system level, and/or provide any other relevant feedback.  Maybe we could mention the possibility of adding a trigger to location reporting control as an alternative, but no strong view. |
| Ericsson | The LS should just point to the RAN3 agreements, if any: 1) cause value 2) modified stage 2 text. |
| Huawei | Agree Qualcomm |
| Thales | See QC and Ericsson suggestions |
| ZTE | Agree with Qualcomm and Ericsson, both the cause value and stage 2 description (if agreed) should be included in LS. |

# Conclusion, recommendations [if needed]

# Reference

1. R3-220285; (TP for BL CR for 38.300) Final aspects of country border crossing; Qualcomm Incorporated.
2. R3-220464; New paging cause for UE Context Release Request; Huawei.
3. R3-220628; Country Routing and Cause Value for UE Context Release; Ericsson LM.
4. R3-220714; (TP for NTN BL CR 38.413) On Cause Value for Cross-country Scenario; CATT.
5. R3-220860; Discussion on Country-Specific Routing; CMCC.
6. R3-220896; (TP for BL CR 38.413) Country-specific Routing for NTN; ZTE.