3GPP TSG-RAN WG3 Meeting #111-e R3-21xxxx

Online, 25 January – 4 February 2021

**Agenda item: 9.3.7**

**Source: Nokia (moderator)**

**Title: Summary of Offline Discussion – mobility restrictions in SN Addition**

**Document for: Approval**

# 1 Introduction

**CB: # 14\_MobRestr\_SNadd**

**Nok**

**st2 impact: Clarify that the target/new NG-RAN node shall use the information contained in the 5GC Mobility Restriction List Container IE to replace the information contained in the Mobility Restriction List IE (except for the Serving PLMN and the Equivalent PLMNs)**

**Introduce in both E-UTRAN and NG-RAN**

**HW**

**st3 impact: introduce 5GC Mobility Restriction List Container IE in the following XnAP messages:**

**- S-NODE ADDITION REQUEST**

**- S-NODE MODIFICATION REQUEST**

**introduce EPC Handover Restriction List Container IE in the following X2AP:**

**- SGNB ADDITION REQUEST**

**- SGNB MODIFICATION REQUEST**

**E///**

**st2 impact: correct ambiguous wording in st2 on the 5GC Mobility Restriction List Container IE**

**abstain from including 5GC Mobility Restriction List Container IE in the S-NODE ADDITION REQUEST message.**

**- st2 impact sufficient? If so, needed for NG-RAN and also for E-UTRAN?; Which release?**

**- check details; merge/revise as needed**

(Nok - moderator)

Summary of offline disc [R3-210967](file:///C%3A%5CUsers%5Cllopes%5COneDrive%20-%20Qualcomm%5CDocuments%5C3%20RAN3%5CRAN3%20111%5CInbox%5CDrafts%5CCB%20%23%2014_MobRestr_SNadd%5CInbox%5CR3-210967.zip)

# 2 [draft] For the Chairman’s Notes

[R3-210096](file:///C%3A%5CUsers%5Cq12059%5CAppData%5CLocal%5CTemp%5C7zOCFD304F6%5CDocs%5CR3-210096.zip) rev in R3-211218 **Agreed** (draftCR to TS 38.300)

[R3-210097](file:///C%3A%5CUsers%5Cq12059%5CAppData%5CLocal%5CTemp%5C7zOCFD304F6%5CDocs%5CR3-210097.zip) rev in R3 211219 **Agreed** (draftCR to TS 36.300)

Add the following statement to the Chairman’s Notes:

**No conclusion whether to include the *5GC Mobility Restriction List Container* IE in the S-NODE ADDITION REQUEST. The topic may need to be revisited when extensions are added to the MRL.**

# 3 Discussion

Please provide your views by 18:00 UTC Friday January 29th

This is a continuation of the discussion initiated at RAN3#110-e, where the following issue was acknowledged:

During S-Node addition, it is unclear whether the MRL propagated over Xn in the Mobility Restriction List IE is based on information from (a) the Mobility Restriction List IE previously received over Xn, or (b) the 5GC Mobility Restriction List Container IE previously received over Xn

At this meeting, there are three sets of papers proposing a way forward:

- Option 1: Stage 3 solution from Rel-15 (see discussion in [4], CRs in [5][6][7][8])

- Option 2: Stage 2 solution from Rel-15 (see discussion in [9], CRs in [10][11])

- Option 3: Same stage 2 solution as option 2 but from Rel-16 (see discussion in [1], CRs in [2][3])

A few distinguishing characteristics of the solutions are as follows:

a) Option 1 enables the SN to operate with a Rel-16 MRL while the MN operates with a Rel-15 MRL. While [4] sees potential benefits of this, [1][9] do not see benefits.

b) Option 1 and Option 3 are backwards compatible, while Option 2 may not be backwards compatible with some Rel-15 implementations (although it could be argued that no harm is done).

## 3.1 NG-RAN

**Question #1: For NG-RAN, which option(s) would be acceptable for you?**

**Please list all options that would be acceptable.**

|  |  |
| --- | --- |
| *Company* | *Comments* |
| Nokia | Either Option 2 or Option 3 is acceptable, as both resolve the issue as it stands today and as can be foreseen in the future. We have doubts regarding the wisdom of enabling the SN to operate with a higher-release MRL than the MN. However, this seems almost like a separate “enhancement” and could anyway be agreed in the future if the scenario is further validated (i.e. agreement now on Option 2 or 3 does not preclude agreement on Option 1 at some point in the future). |
| Qualcomm | Ignoring for a moment the issue of release (taking options 2 and 3 as essentially the same option, call it 2/3): we can acknowledge that options 1 and 2/3 are not mutually exclusive and so in a sense any/all would be acceptable.However we also think that in general nothing stops scenarios where for example either the SN is of a higher release and some SN feature can be deployed without reference to the MN, or some features of a release are implemented in the SN but not in the MN – depending on the specific feature. We do agree that some, maybe most, features should be consistent in MN and SN, but not necessarily all, even today.Then it becomes a matter of luck whether solution 2/3 works for all cases (lots of variables come in, e.g.. if bitmaps or UEs are used in signalling, how the bitmaps are handled, whether or not it is fine for a feature to be used in the SN only etc). The examples and counter-arguments in the documents seem to show that.Taking options 2/3 and leaving option 1 to be done in future if needed means that: every time we touch the MRL, we should consider this topic again (i.e. whether the feature can be independently supported in the SN). Hence the topic will just re-occur. If we go in this direction, at least this consequence needs to be captured. |
| ZTE | So far, option3 is acceptable.When we discuss MR-DC, the fact that MN is the CP controller needs to be respected. |
| Huawei | Select 1.2 does not make sense, it does not solve any issue in any scenario.3 is also NBC from function point of view, as if there are some MN nodes not updated to support this CR, an updated SN will assume the receiving information in the MRL IE is up to data, but actually not. |
| Ericsson | Select Option 2it is the only scenario that makes sense to solve the only issue in the only scenario in question. |

**Moderator’s summary of Question #1**:

- 5 companies provided feedback.

- 3 companies indicated support for the stage 2 solution, and 1 additional company seemed to indicate a willingness to agree to the stage 2 solution (while continuing to consider the stage 3 solution).

- 2 companies indicated support for the stage 3 solution.

- 1 company commented that Option 3 is NBC from functional point of view because “*if there are some MN nodes not updated to support this CR, an updated SN will assume the receiving information in the MRL IE is up to date, but actually not*”.

Regarding the NBC comment about Option 3, the moderator would like to point out that RAN3 has already acknowledged the following:

During S-Node addition, it is unclear whether the MRL propagated over Xn in the Mobility Restriction List IE is based on information from (a) the Mobility Restriction List IE previously received over Xn, or (b) the 5GC Mobility Restriction List Container IE previously received over Xn

Thus, the issue already exists today since (referencing the green text above) an MN may be implemented according to (a) while the SN may be implemented according to (b).

## 3.2 E-UTRAN

**Question #2: For E-UTRAN, are you OK to apply a solution analogous to whatever solution is agreed for NG-RAN?**

**Please respond YES or NO (with optional comments)**

|  |  |
| --- | --- |
| *Company* | *Comments* |
| Nokia | Yes, same issue exists in E-UTRAN with the EPC Handover Restriction List Container. |
| Qualcomm | Depends. Actually the possibility of issues with new features seem to be much less of an issue with E-UTRAN, in which case options 2/3 could be adequate. The argument for option 1 seems more relevant for NG-RAN. |
| ZTE | For EN-DC case, we may consider to align the understanding in Q1. |
| Huawei | Yes, in case 1 is selected. |
| Ericsson | Agree with Qualcomm, lets concentrate on 5G |

**Moderator’s summary of Question #2**:

- 5 companies provided feedback.

- 3 companies indicated that E-UTRAN alignment with NG-RAN is ok.

- 2 companies indicated that E-UTRAN alignment with NG-RAN is not necessary, particularly if Option 1 (stage 3 solution) is selected since the benefits may be less relevant to E-UTRAN.

# 4 [draft] Conclusions, Recommendations

A way forward is proposed below, taking into account the feedback from the 5 companies and the following considerations:

- The primary consideration is to solve the issue acknowledged by RAN3, in the release where the issue occurs. This would mean Option 3 (stage 2 solution from Rel-16), which may not be the first preference for most companies but is potentially acceptable to all.

- The issue seems to exist also for E-UTRAN (due to the addition of the *Unlicensed Spectrum Restriction* IE to the HRL in Rel-16).

- Regarding Option 1, its primary motivation is the scenario where SN is higher release than MN. Two companies see potential benefits with Option 1 but a majority of companies are not convinced, perhaps because the potential benefits appear hypothetical in Release 16 (i.e. no concrete use cases / scenarios have been identified). At that same time, it cannot be precluded that a motivating use case / scenario may be identified in the future as extensions are added to the MRL (as mentioned by Qualcomm).

Proposed way forward:

1) For NG-RAN, agree to the Rel-16 CR in [2].

2) For E-UTRAN, agree to the Rel-16 CR in [3].

3) Capture the following statement in the Chairman’s Minutes:

**No conclusion whether to include the *5GC Mobility Restriction List Container* IE in the S-NODE ADDITION REQUEST. The topic may need to be revisited when extensions are added to the MRL.**

# References

1. R3-210095, Mobility Restrictions in S-Node Addition (Nokia, Nokia Shanghai Bell)
2. R3-210096, Clarification of 5GC Mobility Restriction List Container (Nokia, Nokia Shanghai Bell)
3. R3-210097, Clarification of EPC Handover Restriction List Container (Nokia, Nokia Shanghai Bell)
4. R3-210131, Consideration on MRL in SN Addition Procedure (Huawei)
5. R3-210132, Introduce 5GC Mobility Restriction List Container in DC (Huawei)
6. R3-210133, Introduce 5GC Mobility Restriction List Container in DC (Huawei)
7. R3-210134, Introduce EPC Handover Restriction List Container in EN-DC (Huawei)
8. R3-210135, Introduce EPC Handover Restriction List Container in EN-DC (Huawei)
9. R3-210634, Necessary corrections on the usage of the 5GC MRL Container IE on Xn (Ericsson)
10. R3-210635, Correction related to the 5GC Mobility Restriction List Container (Ericsson)
11. R3-210636, Correction related to the 5GC Mobility Restriction List Container (Ericsson)