3GPP TSG-RAN WG3 #112-e R3-212686

Online, 17th - 27th May 2021

Agenda Item: 16.2.2

Source: Ericsson (moderator)

Title: CB: # 1004\_PRN\_Mobility - Summary of email discussion

Document for: Approval

# Introduction

Chair summary:

**CB: # 1004\_PRN\_Mobility**

**- mechanism for RAN to select appropriate AMF which can support for credential holder providing subscription and credentials**

**- whether target gNB should know the handover characteristics for the onboarding handover**

**- idle mode mobility supporting for key issue#1**

**- existing functionality is sufficient for connected mode mobility?**

Moderator’s Note:

Mobility aspects from papers submitted for AI 16.2.1 are taken into account as well

# For the Chairman’s Notes

to be added

# Discussion

## AMF selection for SNPN access using credentials from Credentials Holder

[R3-211710](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211710.zip) [1] states that it is unclear whether every AMF in a SNPN needs to connect to all separate credentials holders which provide authentication for UEs with credentials from the separate entity.

[1] thinks that, similar as for onboarding, it may be necessary to provide a mechanism for RAN to select an appropriate AMF also for SNPN access using external credentials.

Q3.1: Is a mechanism needed for RAN to select an appropriate AMF for SNPN access using external credentials?

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| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| Huawei | No | This question can be addressed in CB: # 1003 |
| Qualcomm | No | But also agree with Huawei |
| CATT | Yes | The scenario raised by [1] and AMF sharing should be taken into account |

## Mobility for UE onboarding

[R3-211710](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211710.zip) [1] thinks that during remote provisioning, it could be useful for the target cell to know that the handover involves an onboarding UE so that the target cell can schedule its resources (e.g. fewer resources for the restricted PDU session setup for onboarding) and optimize the network (e.g. reduce the number of handovers if the target cell has disabled onboarding) accordingly.

To reduce/avoid the probability of re-trying different target cells, [R3-211899](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211899.zip) [2] thinks that the neighbouring nodes can exchange the onboarding support indication (provided in its broadcast information) to the source node, in order to assist the source cell in the selection of a proper target cell.

On the other hand, [R3-212502](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212502.zip) [3] thinks there is no need to exchange information related to onboarding during mobility.

[R3-212100](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212100.zip) [4] also thinks that the onboarding component (setup of the PDU session) is considered a one-shot procedure, once the UE is registered to the O-SNPN, existing mobility procedures apply between cells of the same O-SNPN, while the UE is remotely provisioned with the credentials for the subscription owner NPN.

Similarly, [R3-211652](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211652.zip) [5] and [R3-212081](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212081.zip) [6] foresee no mobility impact/issues for onboarding,

All above contributions refer to the reply LS from SA2 [S2-2101076](https://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_143e_Electronic/Docs/S2-2101076.zip) [7], which states that “Once the PDU session for remote provisioning has been activated existing 5GS functionality applies for mobility.”

Q3.2: Is there a need to exchange information related to onboarding during mobility?

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| **Company** | **Answer** | **Comment** |
| Huawei | Further study is need | Thanks the moderator to take our proposal into account.  As one component company, we think currently we should not close the door. The scenario we are thinking is that:  *- the target cell may have to reject this PDU session due to limited resource (this happens especially in the case that the target cell does not broadcast the onboarding support indication when it is overloaded.), and then the source node needs to re-try on another target cell.*  So it seems beneficial to exchange the onboarding support indication over Xn to support target cell selection for inter-SNPN handover e.g. **as an overload indication**  Since the congestion control for UE on-boarding is being discussed in other groups (e.g., in radio interface,), we may suggest to take their progress into account, and consider it during the handover. |
| Qualcomm | No | This functionality seems to be not needed. The SA2 LS states “SA2 foresees no impact to mobility procedures” |
| CATT | No | If handover target cell is overloaded, it may be not suitable to select it. This basic function may be implemented by other feature, e.g., MLB. We may no need to implement load control by NPN feature. |

## Mobility for SNPN access using external credentials

[R3-211899](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211899.zip) [2] and [R3-212502](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212502.zip) [3] think that there is no need for the RAN nodes to exchange information related to accessing using external credentials during mobility.

[R3-212100](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212100.zip) [4], [R3-212081](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212081.zip) [6] and [R3-211651](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211651.zip) [8] have not identified any RAN impact due to mobility, such that existing functionality can be applied.

[R3-212081](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212081.zip) [6] thinks that RAN3 should wait for further update from SA2.

Q3.3: Is there a need for the RAN nodes to exchange information related to accessing using external credentials during mobility?

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| **Company** | **Answer** | **Comment** |
| Huawei | No | It seems this can be addressed in CB: # 1003\_PRN\_Onboarding |
| Qualcomm | No | This is transparent to RAN, see also R3-211702 |
| CATT | No | The mobility between SNPN or between SNPN and PLMN has no RAN impact. |

## Idle mode mobility between different networks

[R3-211899](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211899.zip) [2] refers to S2-2103075 (CR to 23.501) and concludes that there is no RAN3 impact for the idle mode mobility [...] for the inter-network case.

Q3.4: Is there any RAN3 impact for idle mode mobility between different networks?

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| **Company** | **Answer** | **Comment** |
| Huawei | So far no | The agreed CR in SA2 is related to inter-SNPN or SNPN/PLMN idle mode mobility. The existing procedure applies. |
| Qualcomm | No | For now there is no change for sure (and no RAN3 impact) |
| CATT | No | No impact for now |

## Connected mode mobility between different networks

[R3-211899](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211899.zip) [2] refers to S2-2103075 (CR to 23.501) thinks that RAN3 can wait for SA2 progress on the handover for the inter-network case.

[R3-212100](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212100.zip) [4] refers to TR 23.700-07 [1] clause 5.5, which clarifies that KI#5 (support for equivalent SNPNs to allow for service continuity between SNPNs) is not addressed within the Rel-17 timeframe.

Q3.4: Is there any RAN3 impact for connected mode mobility between different networks?

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| **Company** | **Answer** | **Comment** |
| Huawei |  | For KI#1, S2-2103075 provides UE Mobility support for SNPN, where the UE will perform registration procedure between SNPN and PLMN, or between SNPNs.  So far there is no impact on RAN3, but we may suggest to wait for their further progress, if any. |
| Qualcomm | Not for now | SA2 is now in normative phase and we can follow the progress of normative work in SA2 on this – if any. However as of now, we don’t expect inter-SNPN service continuity. This is not quite the same as waiting for progress!  What would perhaps be nice is to take the overall working assumption that this WI has no impact on mobility procedures. This can be revised if something new does come up. |
| CATT | No | No impact for now |

# References

1. [R3-211710](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211710.zip) On mobility support for ePRN (China Telecommunication) discussion

1. [R3-211899](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211899.zip)Supporting enhanced private network (Huawei) discussion

1. [R3-212502](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212502.zip)Cell access and mobility aspects for NPN **(**CMCC) discussion

1. [R3-212100](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212100.zip) Mobility (Ericsson) discussion

1. [R3-211652](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211652.zip)Support for Onboarding and Remote Provisioning (Nokia, Nokia Shanghai Bell) discussion

1. [R3-212081](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-212081.zip) Consideration on mobility support for eNPN (ZTE Corporation) discussion

1. [S2-2101076](https://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_143e_Electronic/Docs/S2-2101076.zip) Reply LS on clarification request for eNPN features (SA2) reply LS

1. [R3-211651](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_112-e/Docs/R3-211651.zip)Support for Access with Subscription owned by a Separate Entity (Nokia, Nokia Shanghai Bell) discussion