3GPP TSG-RAN WG3 #117bis-e R3-225933

Online, 10-18 October 2022

Agenda Item: 19.2

Source: Nokia (moderator)

Title: Summary of Offline Discussion on CB: # UAV\_Identification

Document for: Approval

# Introduction

**CB: # UAV\_Identification**

**- How to support subscription based aerial UE identification, Re-use LTE mechanism?**

**- Whether to consider UAV supporting on MRDC, inter-RAT mobility?**

**- Capture agreements and provide CRs if agreeable.**

(Nok - moderator)

Summary of offline disc [R3-225933](file:///C%3A%5CUsers%5Caarjona%5CDocuments%5C001%20-%20Standardization%5C60%20-%20Standardization%20Reports%5C2022%2010%20RAN3-117bis-e%5Ccontributions%5Ccbs%20and%20updates%5CUAV%5CInbox%5CR3-225933.zip)

The first round of discussion is set to deadline on **11th October (Tuesday) 11:00 UTC.**

The final round of discussion is set to deadline on **17th October (Monday) 08:00 UTC.**

# For the Chairman’s Notes

**Agreed to introduce *Aerial UE Subscription Information* IE over NGAP in INITIAL CONTEXT SETUP, UE CONTEXT MODIFICATION, HANDOVER REQUEST, PATH SWITCH REQUEST ACKNOWLEDGE messages**

**Agreed to introduce *Aerial UE Subscription Information* IE over XnAP in HANDOVER REQUEST message**

**Whether to introduce *Aerial UE Subscription Information* IE over XnAP RETRIEVE UE CONTEXT RESPONSE message is FFS**

**WA: The *Aerial UE Subscription Information* IE is based on LTE format with codepoints ENUMERATED (allowed, not allowed, …)**

**Whether RAN3 will require additional work to address Inter-RAT or DC scenarios is subject to RAN2 progress and FFS**

# Discussion

**FIRST ROUND OF DISCUSSIONS**

This is the first meeting in RAN3 where UAV for NR (NR\_UAV) work item is discussed in RAN3. One of the objectives is defined as follows:

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| 2. Specify the signaling to support subscription-based aerial-UE identification [RAN3/SA2 interaction/RAN2]Note: Work done in LTE is a starting point for this objective. NR-specific enhancements can be considered, if needed, while overall the LTE and NR solutions should be harmonized as much as possible. |

Most of the contributions submitted indicate similar proposals.

* Provide Aerial Subscription Information from (a) AMF to gNB via NGAP, and (b) between gNBs via XnAP
* Base the *Aerial UE Subscription Information* IE with similar codepoints as in the LTE solution (ENUMERATED (allowed, not allowed, …)
* Over NGAP, Introduce the Aerial Subscription Information in Initial Context Setup, UE Context Modification, Handover Request, Path Switch Request Acknowledge (\*) messages
* Over XnAP, Introduce the Aerial Subscription Information in Handover Request, Retrieve UE Context Response (\*) messages
* (\*) Indicates messages which were not included as part of all of the proposals

Additionally, some companies made remark that further RAN3 changes may be needed for inter-RAT mobility and Dual-Connectivity is supported by additional RAN2 progress.

Likewise, some draft text proposals were made available within the submissions for Stage 2 (TS 38.300) and Stage 3 (TS 38.413 and TS 38.423).

At this initial meeting, the moderator proposes to capture the high-level agreements to be the basis for the future Stage 2 and Stage 3 specifications changes, and to derive the corresponding BL CRs at the next RAN3#118 meeting.

## Companies to provide valuable comments for the possible solutions

**Q1: Do you agree** **to introduce *Aerial UE Subscription Information* IE with codepoints ENUMERATED (allowed, not allowed, …) over NGAP and XnAP. If not, please indicate the reason.**

|  |  |
| --- | --- |
| Company | Comment |
| Nokia | Yes |
| Huawei | Yes |
| Samsung | Yes |
| Ericsson | Yes |
| NEC | Yes |
| ZTE | Yes |
| Qualcomm | Yes but RAN2/SA2 are discussing about types of UAVs and probably we can wait for other groups progress to specify exact signaling enhancements needed. |
| CATT | Yes  |
| Intel | Yes, given that the all contributing companies are willing to follow the LTE mechanism.  |
| Nokia | In regard to Qualcomm comment above. In our view whether new codepoints are used is not up to RAN2, but it is in scope of RAN3. In that sense, RAN3 should be in position to decide the codepoints, and liaise with SA2 if needed. |

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| **Moderator Summary :**There is vast support for basing the *Aerial UE Subscription Information* IE in line with that of the LTE solution codepoints, with one company suggesting to wait for RAN2/SA2 progress.Hence, the moderator proposes to derive a Working Assumption at this meeting based on the majority view.  |

**Q2: Do you agree to introduce *Aerial UE Subscription Information* IE over NGAP over the following messages? If not, please indicate the reason.**

* **INITIAL CONTEXT SETUP**
* **UE CONTEXT MODIFICATION**
* **HANDOVER REQUEST**
* **PATH SWITCH REQUEST ACKNOWLEDGE**

|  |  |
| --- | --- |
| Company | Comment |
| Nokia | Yes, agree to introduce in all the mentioned NGAP messages |
| Huawei | Yes, as we also proposed in 5694 |
| Samsung | Yes |
| Ericsson | Yes, CR is submitted in R3-225856 |
| NEC  | Yes |
| ZTE | Yes |
| Qualcomm | Yes but RAN2/SA2 are discussing about types of UAVs and probably we can wait for other groups progress to specify exact signaling enhancements needed. |
| CATT | Yes |
| Intel | Yes, as in R3-225948 |

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| **Moderator Summary :**There is support from all companies to introduce the *Aerial Subscription Information* IE over NGAP in the listed messages above, with one company suggesting to wait for RAN2/SA progress.The moderator proposes to agree the introduction of the *Aerial UE Subscription Information* IE over NGAP, with the encoding taken as a working assumption as indicated in Q1. |

**Q3: Do you agree to introduce *Aerial UE Subscription Information* IE over XnAP over the following messages? If not, please indicate the reason.**

* **HANDOVER REQUEST**
* **RETRIEVE UE CONTEXT RESPONSE**

|  |  |
| --- | --- |
| Company | Comment |
| Nokia | Yes, agree to introduce in all the mentioned XnAP messages |
| Huawei | Yes, agree. |
| Samsung | Yes |
| Ericsson | As it is included in Path Switch procedure, see no need to add in XnAP |
| NEC | Yes |
| ZTE | Yes |
| Qualcomm | Ericsson point is valid and also see previous comment as well. |
| CATT | Yes |
| Intel | We are OK if the majority are OK to have over XnAP. But we think the point from E/// is worth checking out: why in LTE we had the IE over X2AP given that we already have it over S1AP PATH SWITCH REQUEST ACKNOWLEDGE?Probably the target eNB (X2 HO) is connected with different MME where such subscription info is not retrieved from the source MME?  |

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| **Moderator Summary :** There is support from all companies to introduce the *Aerial Subscription Information* IE over XnAP in the HANDOVER REQUEST message, while there are doubts expressed regarding the need of this IE within RETRIEVE UE CONTEXT RESPONSE message.Hence, the moderator proposes to * Agree the introduction of the *Aerial UE Subscription Information* IE over XnAP HANDOVER REQUEST message
* Leave as FFS whether to introduce *Aerial UE Subscription Information IE* over XnAP RETRIEVE UE CONTEXT RESPONSE message.
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**Q4: Other comments if any:**

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| Company | Comment |
| ZTE | **TU issue:**Based on the contributions received in this meeting, it seems that majority companies prefer to re-use LTE mechanisms for NR subscription based UAV identification. I assume companies can easily make consensus on this topic in this meeting or next meeting. So do we need to re-consider the TU allocation for this topic in RAN3?**Further discussion on UAV:**It is clear that both LTE and NR will support UAV functions after Rel-18. Considering UAV is a kind of small, quick, and high speed device, its mobility may much flexible and involve larger space than common UE. During the UAV service duration, both LTE and NR may be involved. Will we need to discuss how to support UAV for inter-RAT/system mobility or DC case? |
| Qualcomm | We need to consider IRAT mobility between LTE/5GC and NR-SA within 5GS. Regarding MR-DC, EN-DC follows LTE solution and no need to do anything. For other MR-DC and NR-DC cases, MN support can be baseline. Whether to support for SN based UAV enhancements, we can wait for RAN2 if any discussion.  |
| Nokia | With regard to ZTE comment above* For TU allocation, we believe that is matter for RAN plenary discussion. RAN3 should focus on progressing the work and reporting it accordingly.
* For possible Inter-RAT or DC impact. To our knowledge RAN2 is not covering these scenarios yet. Any RAN3 work/impact on this matter in that sense is subject to RAN2 progress and further decisions.
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| **Moderator Summary :**The moderator proposes to capture the concern on additional RAN3 impact for Inter-RAT or DC scenarios as an FFS and subject to RAN2 progress. |

# Conclusion, Recommendations [if needed]

**TBU**

# References

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| [R3-225374](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225374.zip) | UAV Support over NG-RAN interface (NEC) | discussion |
| [R3-225572](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225572.zip) | On subscription-based UAV UE identification (Nokia, Nokia Shanghai Bell) | discussion |
| [R3-225618](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225618.zip) | Subscription-based Aerial-UE Identification for NR (CATT) | other |
| [R3-225694](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225694.zip) | Initial discussion on NR support for UAV (Huawei) | discussion |
| [R3-225804](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225804.zip) | Subscription-based aerial-UE identification for NR UAV (CMCC) | discussion |
| [R3-225855](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225855.zip) | NR support for UAV WI (Ericsson) | discussion |
| [R3-225856](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225856.zip) | Introduction of Aerial authorization information (Ericsson, AT&T, NTT DOCOMO, INC, Qualcomm Incorporated, Intel Corporation) | CR0618r2, TS 38.413 v17.2.0, Rel-18, Cat. B |
| [R3-225875](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_117bis-e%5CDocs%5CR3-225875.zip) | Discussion on NR support for UAV (ZTE) | discussion |