3GPP TSG SA WG2 Meeting #140-e S2-2005689r32

Electronic, 19 Aug – 02 Sep, 2020

**Title: LS on System support for Multi-USIM devices**

**Response to:**

**Release: Rel-17**

**Work Item: FS\_MUSIM**

**Source: SA2**

**To: RAN2, RAN3, SA3**

**Cc: -**

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**Attachments:** None

# 1 Overall description

SA2 have progressed the study on FS\_MUSIM (TR 23.761). To finalize the work, SA2 provides the following questions for feedback:

|  |  |
| --- | --- |
| **Solution principle for further study in SA2** | **Question to RAN WGs** |
| Paging Cause | Q1: Please confirm the feasibility of sending a Paging Cause in [Uu] Paging message for EPS and for 5GS. **[RAN2, RAN3]**  Q2: Please indicate whether adding the paging cause (e.g. 3-4bits) per UE in the paging message would reduce the number of paging records that could be included in a single paging message, and if so by what magnitude. (For NR and E-UTRA) **[RAN2]**  Q3: Please indicate how the paging cause is expected to be supported in RAN nodes (e.g. per PLMN, per TA, per RAN node, per cell)(For NR and E-UTRA) **[RAN2, RAN3]** |
| Busy indication | Q5: Please indicate an order of magnitude (tens of ms? Hundreds of ms?) of the expected time required to send a (NAS) Busy Indication for USIM A and whether a scheduling gap would be needed for USIM B to do so **[RAN2]**  Q6: Please provide feedback if it is feasible (and secure) that the Busy Indication is sent as RRC message instead (no NAS message to the CN) i.e. as a RRC response to paging without requiring an RRC connection **[RAN2, RAN3, SA3]** |
| RRC-based leaving and returning with the following assumptions:  - Leaving is always triggered by the UE with an RRC request to the network. The UE leaves either upon explicit acknowledgement by the network, or by a given time if no (RRC-level) acknowledgement is received from the network.  - The UE may be released to either RRC Inactive or RRC Idle based on available information (e.g. Assistance information, configuration). The UE may return while still in RRC Inactive using RRC signaling (i.e. Resume the RRC connection). However if the UE does not return for an extended time period, the UE autonomously enter RRC Idle from RRC Inactive and RAN also autonomously moves the UE RRC state into RRC Idle from RRC Inactive.  NOTE 1: the duration of the extended time period is subject to RAN decision  - The UE uses the above to perform a MO procedure (e.g. periodic mobility registration, keep-alive message, sending (NAS) busy indication, etc.) or a MT procedure (e.g. pick-up an SMS, inspect a MT service invite, respond to a network-initiated C-plane procedure, etc.) in the other network. | Q8: Please indicate whether it is feasible to define an RRC-based leaving and returning procedure in 5GS/NR. **[RAN2, RAN3]**  Q9: Please let us know whether changes to 5GS/E-UTRA (Option 5) to support RRC-based leaving is part of RAN Work Item. **[RAN2, RAN3]** |

SA2 would also like to point out that TR 23.761 also contains several solutions for paging reception when paging collisions are detected. These solution requires RAN’s feedback. The solution principles in these solutions can be categorized as follows:

- UE -requested 5G-GUTI reassignment for one USIM using the Mobility Registration Update). However, it should be noted the 5G-GUTI is systematically reassigned by the network during the Mobility Registration Update procedure (as of Rel-15) requires. Proposed for 5GS only.

- Changes related to the UE\_ID (UE Identity Index) that is used for calculation of PF/PO only::

- Calculation of PF/PO by using an Alternative UE\_ID I. The UE ID sent in the paging message is not impacted by this Alternative ID that is only used for PO/PF calculations Proposed for both EPS and 5GS.

- Calculation of PF/PO by using an UE\_ID which is derived from IMSI+offset value. The offset value is negotiated between UE and MME . Proposed for EPS only.

- Calculation of PF/PO based on MUSIM Assistance Information whoich can carry either a paging policy selector in RAN or an Alternative ID (like in solution above) or a pattern of availability (e.g. specific SFN Slots/ DRX cycles).

- Repeating paging in the RAN on consecutive POs. for MUSIM devices.

- UE Implementation-based solution to address overlapping POs (like today)

- Access Stratum-based solution with scheduling gap .

Q10: SA2 would like to ask RAN2 whether these approaches are all feasible for in 5GS and where applicable EPS.

Qxx: SA2 would like to ask RAN2 and RAN3 to take these solutions into consideration and provide feedback including proposals from RAN that SA2 may have not yet considered.

Qy: Some companies in SA2 believe that the RAN plenary decision on “No E-UTRA impact” restriction is only related to layers RRC and below. Other companies in SA2 believe that the restriction also includes no impact to S1\_AP and NG\_AP. It would be helpful for SA2 to get the correct definition of the WI restriction from RAN WGs.

# 2 Actions

**To RAN2, RAN3, SA3**

**ACTION:** SA2 kindly asks RAN2, RAN3 and SA3 to take into consideration the information above and provide answers to questions above

# 3 Dates of next TSG SA WG 2 meetings

SA2#141E 12-23 October Electronic meeting

SA2#142E 16-20 November Electronic meeting