3GPP TSG-RAN WG2 #123-bis R2-23xxxxx

Xiamen, China, October 9th – 13th 2023

Agenda Item: 7.13.6

Source: Ericsson

Title: Summary of the AI 7.13.6 RACH optimization (Ericsson)

Document for: Discussion, Agreement

# Introduction

This document is to provide a summary of the contributions submitted to the meeting RAN2#123bis focusing on the FFS as well as new proposals that can be considered if time during the online session allows.

# Discussion

### 2.1 Including NSAG information in the RA-report

Concerning the NSAG information logging there has been an FFS on whether to log the NSAG IDs triggering the RA procedure and broadcasted as part of the SIB1 of the cell toward which the RA procedure was performed or not. This FFS is quoted in the following.

FFS: Further discuss whether the following NSAG IDs to be included in the RA reports:

a) NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt and included in SIB1 (even if they were not used to select the RA configuration, e.g., due to belonging to lower priority NSAGs).

b) NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt (even if they are not included in SIB1).

Concerning this FFS the following proposals are summarized in the Tabel 1.

**Table 1. List of proposals for including the NSAG ID in the RA report**

|  |  |
| --- | --- |
| **Company** | **Proposal** |
| Xiaomi ([R2-2310049](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310049.zip)) | **Proposal 1:** The following options can be considered to ensure that the NSAG is used for RACH procedure. Option1: UE includes the NSAG(s) that belong to the S-NSSA(s) triggering the RA attempt, and the time that elapsed between the RACH triggered and report retravel which is used for the NSAG filtering by NG-RAN. Option2: UE includes the NSAG(s) that belong to the S-NSSAI(s) triggering the RA attempt and not included in SIB16 and RRCRelease. |
| CMCC ([R2-2310272](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310272.zip)) | **Proposal 1:** RAN2 agrees that UE reports all NSAG ID(s) which are associated with the S-NSSAI(s) triggering the random access attempt even if it is not included in SIB1. |
| Apple ([R2-2310344](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310344.zip)) | **Proposal 1:** only signal NSAG ID that is assigned to the S-NSSAI triggering the RA attempt and belongs to the NSAG ID of the feature combination used to select the RA configuration should be reported (as agreed in RAN2#123). |
| CATT([R2-2310367](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310367.zip)) | **Proposal 8:** It is not necessary to report the NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt and included in SIB1 if they were not used to select the RA configuration, e.g., due to belonging to lower priority NSAGs).  **Proposal 9:** It is suggested to report the NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt and not included in SIB1, which could help network to optimize the RA configuration to support this NSAG ID(s). |
| Huawei ([R2-2310504](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310504.zip)) | 1. UE does not report the NSAG ID not included in SIB1, i.e not intended for RA procedure by network implementation. |
| ZTE ([R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip)) | **Proposal 3:** UE includes all NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt in RACH report when triggering RACH partitioning event is slicing. |
| Samsung ([R2-2310614](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310614.zip)) | **Proposal 1:** The list of NSAGs that triggered feature specific RACH are the NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt (even if they are not included in SIB1). UE excludes the NSAG(s) listed in SIB16 during the reporting. |
| Nokia ([R2-2310705](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310705.zip)) | **Proposal 1:** RAN2 does not purse to include additional NSAG ID(s) in the RA reports except the one agreed in RAN2#123. |
| Ericsson ([R2-2310748](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310748.zip)) | **Proposal 4:** UE include NSAG ID(s) that belong to the S-NSSAI(s) triggering the RA attempt (even if they are not included in SIB1). |
| China Telecom ([R2-2310792](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310792.zip)) | **Proposal 2:** RACH report can include NSAG IDs that are associated with the S-NSSAI(s) triggering the access attempt in SIB1. |

Based on the provided proposals:

* 5 companies proposed to include the NSAG IDs associated to the S-NSSAIs that triggered the RA procedure, irrespective of whether they are broadcasted in SIB1 or not.
* 4 companies proposed some filtering conditions for the NSAGs to be logged in the RA report.
* 1 company propose to exclude the filter out the NSAGs UE received as part of RRCRelease or SIB16

Provided that there is a two camp on the available solutions, rapporteur would like to invite companies to discuss the way forward in the online session.

1. RAN2 discuss UE logs the NSAG ID(s) associated to the S-NSSAI(s) triggering the RA procedure (even if they are not included in SIB1).

### 2.2 Including NSAG priority information in the RA-report

Concerning the NSAG priority information logging the following note has been captured in the session notes in the meeting RAN2#123.

Postponed: RAN2 to discuss whether to include the priorities of the NSAG IDs either explicitly or implicitly.

Concerning this note, 8 companies provided their view that is summarized in the following Table 2.

**Table 2. List of proposals for implicit or explicit NSAG priority logging in the RA report**

|  |  |
| --- | --- |
| **Company** | **Proposal** |
| CMCC ([R2-2310272](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310272.zip)) | **Proposal 2:** The priority of NSAG IDs is implicitly included in RACH report (implicitly indicated by the order of reported NSAG ID). |
| Apple ([R2-2310344](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310344.zip)) | **Proposal 2:** signalling of the NSAG priority (or “NSAG information” besides NSAG ID) which is only known to UE and AMF (but not to NG-RAN) is not needed. |
| CATT([R2-2310367](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310367.zip)) | **Proposal 10:** Include the priorities of the NSAG ID to help network configure the RA resource to NSAG ID with high priority. FFS explicit way or implic |
| Huawei ([R2-2310504](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310504.zip)) | **Proposal 3:** The NSAC priority could be indicated implicitly via the order of reported NSAG ID. |
| ZTE ([R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip)) | **Proposal 4:** The UE includes NSAG IDs in the RACH report by priority configured by CN (i.e., highest priority first, by descending order) . |
| Samsung ([R2-2310614](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310614.zip)) | **Proposal 2:** UE reports the NAS provided NSAG priority for the NSAGs that triggered random access.  **Proposal 3:** UE reports feature priority implicitly e.g. by including the applicable features in the feature combination in the priority order in the RA Report. |
| Nokia ([R2-2310705](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310705.zip)) | **Proposal 2:** RAN2 to agree not including NSAG priority information in the RA report. |
| China Telecom ([R2-2310792](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310792.zip)) | **Proposal 1:** The NSAG priority can be included in the RA report when the applicable feature is slicing. |

Based on the provided proposals rapporteur observes that 7 companies agree to log the NSAG priority in the RA report while 2 companies disagree. Among the companies proposing to log the NSAG priority in the RA report 4 companies proposed to implicitly log the NSAG priority (e.g., in a descending order) while 4 companies didn’t address the implicit or explicit logging. Therefore, based on the above proposals the following is suggested.

1. RAN2 agree UE logs the NSAG priorities implicitly (logging based on the decreasing order of priority).

### 2.3 Including S-NSSAI information in the RA-report

**Table 3. List of proposals for the Slice ID information logging in the RA report**

|  |  |
| --- | --- |
| Company | Proposal |
| Huawei ([R2-2310504](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310504.zip)) | UE does not report S-NSSAI, since the granularity of NSAG, reported by UE, is sufficient for optimization of the RA resource segmentation. |
| Ericsson ([R2-2310748](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310748.zip)) | **Proposal 3:** UE include slice information, i.e., S-NSSAI(s) that triggered the RACH through a given partition in the RA report. |
| China Telecom ([R2-2310792](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310792.zip)) | **Proposal 3:** The S-NSSAI(s) can be included in the RA report for the optimization of the mapping between S-NSSAI and NSAG. |

Concerning inclusion of the slice ID i.e., S-NSSAI three companies provided their input wherein 2 companies propose to include the S-NSSAI that triggered the RA procedure in the RA report and 1 company proposes such information is not needed and logging the NSAG IDs used to trigger the RA procedure is sufficient for the optimization of the RACH partitions allocated to different slices. Given that there is no clear majority (lack of enough input by companies) rapporteur proposes to discuss this topic in the online session.

1. RAN2 discuss whether to include the slice IDs (S-NSSAIs) that triggered the RA procedure in the RA report.

### 2.4 Successful or failed SDT indication in the RACH report

Concerining the SDT information logging in the RA report performed for the sake of SDT operation the following agreement was captured in the session notes of the meeting RAN2#123.

2 Addition of an indication in RA report whether RA-SDT procedure is successful or not. Details of the indication and whether it is a single flag or further differentiation of the failure scenarios are needed are FFS.

In this regard companies provided their views which are listed in the following table 4.

**Table 4. List of proposals for SDT failure indication in the RA report**

|  |  |
| --- | --- |
| Company | Proposal |
| CATT([R2-2310367](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310367.zip)) | **Proposal 4:** Define a flag to indicate whether RA-SDT procedure is successful or not. |
| Huawei ([R2-2310504](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310504.zip)) | Proposal 4: A separate indication is introduced to indicate whether RA-SDT procedure is successful or not.  Proposal 5: RAN2 clarify that the normal legacy RA procedure for UL transmission should not and never be considered to be SDT failure. |
| SHARP ([R2-2310428](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310428.zip)) | **Proposal 1:** RAN2 discusses which condition can be considered an SDT failure firstly, whether only RA problem in SDT is an SDT failure or other conditions that SDT is stopped can also be considered as SDT failure. **Proposal 2:** use an explicit 1-bit indicator in RA report for whether RA-SDT procedure is successful or not |
| ZTE ([R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip)) | **Proposal 1:** UE includes the failure cause of failed SDT operation (e.g., expiry of T319a, reaches maximum RLC retransmission and etc.) in RACH report. |
| Samsung ([R2-2310614](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310614.zip)) |  |
| NEC ([R2-2310649](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310649.zip)) | **Proposal 1:** Include one single flag in RA report whether RA-SDT procedure is successful or not. **Proposal 2:** RAN2 to consider support RA-report enhancement for RA procedure during CG-SDT. |
| Nokia ([R2-2310705](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310705.zip)) | **Proposal 3:** RAN2 agree to use a single flag as the indication whether RA procedure is successful or not.-SDT  **Proposal 4:** RAN2 does not discuss any further RA report optimization related to SDT in Rel-18. |
| Ericsson ([R2-2310748](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310748.zip)) | **Proposal 5:** UE include a single flag in the RA report to indicate SDT failure. The gain of further differentiation is unclear. |

Concerning the success or failure indication of the SDT procedure 7 companies provided their views.

6 companies proposed to use a single flag to indicate whether the SDT operation was successful or failed while one company proposed to have detailed information of the SDT failure cause in the RA report. There seems to be a majority supports to log one single flag for the failure of SDT. Given that in a healthy network the rate of successful SDT should be much higher than the failed SDT, therefore rapporteur things the flag could be set only for the case of SDT failure.

1. RAN2 agree to include a single flag indicating whether the SDT was failed or not.

### 2.5 RACH partitioning information in RACH report

In addition, an LS is received from RAN3 on the inclusion of the PRACH resources allocated to the partition that the UE selected to perform RA procedure for a feature or a combination of features. Three different options are provided as following.

**Alt1:** Enable the addition in the RA Report of the feature priority of each feature in the feature combination used by the UE at the time RACH access is triggered. This enables the NG-RAN to determine whether any optimization is needed with respect to how features with different priorities are combined in the same feature combination associated to a RACH partition.

**Alt2:** Enable the addition in the RA Report of RACH partition configuration information. This information consists of the start preamble index and the number of preambles in the partition for which the RA Report was generated. This enables the NG-RAN to determine the RACH partition in use.

**Alt 3:** Enable the addition in the RA Report of the time between RACH access that led to the generation of a RA Report and when RA Report was retrieved. Using this timer, and in case the NG-RAN stores time records of past RA Partitions configurations, feature priorities and feature combinations, the NG-RAN can figure out the RACH configuration, feature priorities and feature combination in use.

In this regards companies provided their view as shown in the Table 5.

**Table 5. List of proposals for RACH partitioning information in the RA report**

|  |  |
| --- | --- |
| Company | Proposal |
| CMCC ([R2-2310272](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310272.zip)) | **Proposal 3:** RAN2 agrees that the start preamble index and the number of preambles in the partition are included in RA report. |
| Huawei ([R2-2310500](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310500.zip)) | Observation 1: Alt1, Alt2 and Alt3 are feasible from RAN2 point of view, and alt2 may lead to more overhead than alt1/alt3. Observation 2: The network is not mandated to store the UE context, which makes alt.3 not as stable as UE reporting in alt.1 and alt.2. Observation 3: Both alt1 and alt2 are useful for network optimizations. Proposal 1: RAN2 to discuss observation 1, 2 and 3, and then RAN2 can provide feedbacks to RAN3 if there are some progress. |
| Nokia ([R2-2310705](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310705.zip)) | **Proposal 5:** RAN2 to agree Alt3 as the preferred alternative and send a reply to RAN3 accordingly. (See the draft reply LS proposal in the Annex.) |
| Ericsson ([R2-2310748](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310748.zip)) | **Proposal 1:** UE includes start preamble index and the number of preambles in the partition that triggered the RA procedure in the RA report. |
| Qualcomm ([R2-2311085](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2311085.zip)) | **Proposal 1:** To minimize overhead on the UE, adopt solution alternative 3 for retrieving the RACH partitioning configuration.  **Proposal 2:** The timer information should be provided per the RA procedure.  **Proposal 3:** To reduce overhead on the UE, the timer information can be coarser (e.g., on the minutes level) instead of fine-granular (e.g., on the second level). |

Based on the provided summery there is no clear convergence among the companies and hence all the three options can be discussed online. Therefore, the following is proposed.

RAN2 discuss which information to be logged based on the three alternatives provided by RAN3 LS (R3-234643):

* 1. UE logs the feature priority of each feature in the feature combination used by the UE at the time RACH access is triggered
  2. UE logs the RACH partition configuration information i.e.,, start preamble index and the number of preambles in the partition
  3. UE logs time between RACH access that led to the generation of a RA Report and when RA Report was retrieved

### 2.6 Miscellaneous proposals if time allows.

In this section we summarize the proposals that are provided by a minority of companies as well as the proposals that may not fall in the scope of Rel-18 SON WID. Therefore, it is suggested to discuss them if time allows.

#### 2.6.1 EN-DC RACH

Huawei in ([R2-2310504](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310504.zip)) proposed the following.

**Observation 2: Unlike the RLF report, handover report and SHR report via the CN, RA report forwarding via CN would occur much more frequently and consequently cause high signalling load at the CN.**

**Observation 3: The E-UTRAN MN always retrieve the RA report including LTE RA report and NR RA report timely since only one LTE RA report is available at the UE, and the LTE RA report and NR RA reports are most likely to be retrieved simultaneously.**

1. The unique PCell IDs corresponding to the PSCell ID, reported by UE, is recommended to enable the SN RA report forwarding in inter-MN handover case.

Given that the discussion based on the provided observations and the proposed text in the paper requires RAN3 competence, we suggest to discuss this topic in RAN3 first, hence no proposal is made on this topic in RAN2.

#### 2.6.2 SDT related proposals

Concerning the SDT related information in the RA report when the RA is triggered based on the SDT feature, there are some miscellaneous proposals proposed by single companies which can be discussed if time allows.

SHARP in ([R2-2310428](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310428.zip)) proposed the following

**Proposal 3:** when an RA procedure is for SDT (both for SDT failure or success), UE reports the DL RSRP and pending UL data volume at the time of SDT initiation.

And ZTE in ([R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip)) proposed the following

**Proposal 2:** UE includes below information in RA report containing SDT information:  
The data volume buffered at UE side upon SDT initiation  
The data volume buffered at UE side when SDT fails

Therefore, it is proposed to discuss the above proposals.

1. RAN2 discuss which of the following information to the logged in the RA report when the SDT triggers an RA procedure
   1. UE reports the DL RSRP and pending UL data volume at the time of SDT initiation.
   2. The data volume buffered at UE side upon SDT initiation
   3. The data volume buffered at UE side when SDT fails

#### 2.6.3 Power ramping suspension information

Sharp in ([R2-2310423](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310423.zip)) concerning the power ramping information in the RA report proposed the following

**Proposal 1:** RAN2 firstly discusses what kind of power information for an RA procedure the network actually needs for RA enhancement.  
**Proposal 2:** if power ramping information is needed at network, RAN2 considers the following options:  
Option 1: UE indicates whether notification of suspending power ramping counter has been received from power layer per RA attempt in RA report.  
Option 2: UE indicates whether power ramping is performed or not per RA attempt in RA report.

Moreover ZTE in ([R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip)) has similarly proposed the following

**Proposal 2:** Introduce in RA report an indication to indicate whether notification of suspending power ramping counter has been received from lower layers per RA attempt.

Although the power ramping suspension information was not part of the Rel-18 SON WID, given that 2 companies provided similar proposals, rapporteur would to discuss this topic if time allows in Therefore rapporteur would like to propose the following.

1. RAN2 firstly discusses what kind of power information for an RA procedure the network actually needs for RA enhancement.
2. if power ramping information is needed at network, RAN2 considers the following options:  
   Option 1: UE indicates whether notification of suspending power ramping counter has been received from power layer per RA attempt in RA report.  
   Option 2: UE indicates whether power ramping is performed or not per RA attempt in RA report.

#### 2.6.4 Other proposals

For the sake of controlling the retrical of the RA reports by the network, Nokia in () proposed the following

**Proposal 6:** RAN2 to agree for allowing the NW to control and indicate to the UE which RACH configuration associated RA report (e.g., related to the last RA configuration and/or all RA reports regardless of the RA configuration) should be sent to the NW.

However, rapporteur believes this is out of the scope of the Rel-18 RA optimization and hence no proposal is made based on this contribution on this specific topic.

Similarly Ericsson in () proposed to include an indication in the RA report to differentiate the RA performed toward a cell acting as an MCG or an SCG.

**Proposal 6:** Include information in the RA report on whether the random-access procedure was executed towards an MCG cell or an SCG cell

Given the other relevant open issues, rapporteur think this topic can be postponed to the next meetings.

Concerning the value of the RA purpose for the SCell when the UE triggers the RA procedure due to the SR failure or due to unavailability of the PUCCH resources when the SR is triggered ZTE in ([R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip)) proposed the following.

**Proposal 1:** UE sets raPuspose to SchedulingRequestFailure when the consistent LBT failures in SCells triggers SR and the SR fails or sets the raPurpose to noPUCCHResourceAvailable when consistent LBT failures in SCells triggers SR but there are no available PUCCH resource.

However, rapporteur believes the RA purpose is properly sets under the mentioned scenarios as quoted in the following from 38.331.

***raPurpose***

This field is used to indicate the RA scenario for which the RA report entry is triggered. The RA accesses associated to Initial access from RRC\_IDLE, RRC re-establishment procedure, transition from RRC-INACTIVE. The indicator *beamFailureRecovery* is used in case of successful beam failure recovery related RA procedure in the SpCell [3]. The indicator *reconfigurationWithSync* is used if the UE executes a reconfiguration with sync. The indicator *ulUnSynchronized* is used if the random access procedure is initiated in a SpCell by DL or UL data arrival during RRC\_CONNECTED when the timeAlignmentTimer is not running in the PTAG or if the RA procedure is initiated in a serving cell by a PDCCH order [3]. The indicator *schedulingRequestFailure* is used in case of SR failures [3]. The indicator *noPUCCHResourceAvailable* is used when the UE has no valid SR PUCCH resources configured [3]. The indicator *requestForOtherSI* is used for MSG1 based on demand SI request. The indicator *msg3RequestForOtherSI* is used in case of MSG3 based SI request. The field can also be used for the SCG-related RA-Report when the *raPurpose* is set to *beamFailureRecovery*, *reconfigurationWithSync*, *ulUnSynchronized*, *schedulingRequestFailure* and *noPUCCHResourceAvailable*.

Therefore, rapporteur proposes the following.

1. RAN2 discuss if raPurposes (including SchedulingRequestFailure and noPUCCHResourceAvailable) require any change when the LBT failure leads to an SR procedure failure or unavailability of the PUCCH resources for the SR in SCell.

Samsung in ([R2-2310614](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310614.zip)) argue that when the UE is configured with RA prioritization for slicing or RA prioritization for Access Identities, the powerrampingstep and backoff indicator depend on RA-Prioritization configured for slicing or AI. Therefore for the sake of better uplink coverage analysis the following is proposed.

Proposal 4: UE reports if it has used slicing specific or AI specific RACH parameters for the RA.

Therefore,

1. RAN2 discuss whether UE reports if it has used slicing specific or AI specific RACH parameters for the RA.

# Conclusion

1. RAN2 discuss UE logs the NSAG ID(s) associated to the S-NSSAI(s) triggering the RA procedure (even if they are not included in SIB1).
2. RAN2 agree UE logs the NSAG priorities implicitly (logging based on the decreasing order of priority).
3. RAN2 discuss whether to include the slice IDs (S-NSSAIs) that triggered the RA procedure in the RA report.
4. RAN2 agree to include a single flag indicating whether the SDT was failed or not.
5. RAN2 discuss which information to be logged based on the three alternatives provided by RAN3 LS (R3-234643):
   1. UE logs the feature priority of each feature in the feature combination used by the UE at the time RACH access is triggered
   2. UE logs the RACH partition configuration information i.e.,, start preamble index and the number of preambles in the partition
   3. UE logs time between RACH access that led to the generation of a RA Report and when RA Report was retrieved

if time allows RAN2 also discuss the following proposals:

1. RAN2 discuss which of the following information to the logged in the RA report when the SDT triggers an RA procedure
   1. UE reports the DL RSRP and pending UL data volume at the time of SDT initiation.
   2. The data volume buffered at UE side upon SDT initiation
   3. The data volume buffered at UE side when SDT fails
2. RAN2 firstly discusses what kind of power information for an RA procedure the network actually needs for RA enhancement.
3. if power ramping information is needed at network, RAN2 considers the following options:  
   Option 1: UE indicates whether notification of suspending power ramping counter has been received from power layer per RA attempt in RA report.  
   Option 2: UE indicates whether power ramping is performed or not per RA attempt in RA report.
4. RAN2 discuss if raPurposes (including SchedulingRequestFailure and noPUCCHResourceAvailable) require any change when the LBT failure leads to an SR procedure failure or unavailability of the PUCCH resources for the SR in SCell.
5. RAN2 discuss whether UE reports if it has used slicing specific or AI specific RACH parameters for the RA.

# 4. References

1. [R2-2310049](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310049.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310049) [Consideration on the SON enhancements for RACH report](\R2-2310049.zip) Xiaomi
2. [R2-2310272](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310272.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310272) [Discussion on RACH Enhancement for SONMDT](\R2-2310272.zip) CMCC
3. [R2-2310344](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310344.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310344) [RACH enhancements remaining issues](\R2-2310344.zip) Apple
4. [R2-2310367](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310367.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310367) [RACH enhancement for SON](\R2-2310367.zip) CATT
5. [R2-2310423](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310423.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310423) [Power information in RA report](\R2-2310423.zip) SHARP Corporation
6. [R2-2310428](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310428.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310428) [RA report enhancement for SDT](\R2-2310428.zip) SHARP Corporation
7. [R2-2310434](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310434.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310434) [[Draft] Reply LS on RACH enhancement](\R2-2310434.zip) CMCC
8. [R2-2310500](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310500.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310500) [Discussion on RACH enhancement (RAN3 LS R3-234643)](\R2-2310500.zip) Huawei, HiSilicon
9. [R2-2310504](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310504.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310504) [Discussion on leftover issues for RACH enhancement](\R2-2310504.zip) Huawei, HiSilicon
10. [R2-2310566](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310566.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310566) [Consideration on RACH partitioning enhancements](\R2-2310566.zip) ZTE Corporation, Sanechips
11. [R2-2310567](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310567.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310567) [Consideration on other RACH enhancements](\R2-2310567.zip) ZTE Corporation, Sanechips
12. [R2-2310614](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310614.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310614) [SON/MDT enhancements for RACH](\R2-2310614.zip) Samsung
13. [R2-2310649](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310649.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310649) [Discussion on RACH enhancement for SON](\R2-2310649.zip) NEC
14. [R2-2310705](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310705.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310705) [Discussion on RACH enhancement for SON and reply LS proposal to R2-2309437/R3-234643](\R2-2310705.zip) Nokia, Nokia Shanghai Bell
15. [R2-2310748](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310748.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310748) [RA report enhancement](\R2-2310748.zip) Ericsson
16. [R2-2310792](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123bis/Docs/R2-2310792.zip) [M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2310792) [Discussion on RACH enhancement](\R2-2310792.zip) China Telecom Corporation Ltd.
17. R2-2311085 M Discussion on RA-Report enhancement for RACH partitioning information Qualcomm Incorporated