**3GPP T****SG-RAN WG3 Meeting #117bis-e R3-225909**

**Online, 10th – 18th October 2022**

Agenda Item: 10.2.3

Source: CMCC (Moderator)

Title: Summary of offline discussion on RACH optimization

Document for: Discussion and Decision

# Introduction

**CB: # SONMDT3\_RACH**

**- RAN2 to discuss RACH partitioning?**

**- RACH report retrieval, UE/or NW based solution?**

**- RACH report in MR-DC, reply LS to RAN2?**

**- Capture agreements and open issues**

(CMCC - moderator)

Summary of offline disc [R3-225909](file:///C:\z00274494\Downloads\Inbox\R3-225909.zip)

The discussion will be organized to two phases,

**Phase I: Discuss and try to achieve agreements**

**Phase II: Work on reply LS and potential TPs**

The deadline for the phase I discussion is Thursday 13th Oct. UTC 10:00

The deadline for the phase 2 discussion is Monday 17th Oct. UTC 08:00

# For the Chairman’s Notes

**RACH partitioning:**

**Proposal 1: RA report is enhanced to include feature combination related information for RACH partitioning optimization. FFS whether it should be the feature/feature combination UE intends to initiate and/or feature/feature combination UE finally successfully initiates.**

To be continued on the following information:

-     Feature priorities configured by network, which is the determining factor for selection of RACH partition for feature combination;

-     RA resources configured with feature indicator(s), which is the pool of RACH resources for RACH feature of feature combination;

-     Configuration info per RA attempt or the time from RA attempt to reporting

-     The actual information per RA attempt, such as SSB RSRP and MSG3 RSRP

**RACH report retrieval:**

**Proposal 1: WA: RAN3 works on the network based solution for RACH report retrieval, i.e., gNB-DU indicates to gNB-CU about the availability of RACH reports when the occurrence of the RACH procedure is not known to the gNB-CU**

**Proposal 2: If the network based solution is agreed, SN should indicate the availability of RA reports to the MN, MN can fetch the RA report and transfer it to SN**

**SN RACH report in MR-DC**

**Proposal 1: RAN3 has supported EN-DC, (NG)EN-DC, and NR-DC scenarios in Rel-17. No further work will be triggered in RAN3.**

**Proposal 2: If RAN2 decides to support SN RA Report for EN-DC and (NG)EN-DC, UE should report the PScell identity outside the RACH report to help the network forward the report to the correct node**

**Proposal 3: The Reply LS to RAN2 captures the following,**

-     **RAN3 has supported EN-DC, (NG)EN-DC, and NR-DC scenarios in Rel-17. No further work will be triggered by RAN3 in Rel-18**

-     **If RAN2 decides to support SN RA Report for EN-DC and (NG)EN-DC, UE should report the PScell identity outside the RACH report to help the network forward the report to the correct node**

**Other cases:**

**Proposal: RACH optimization for SDT can be addressed towards the end of the work item if time allows**

# Discussion

3.1 RACH partitioning

Based on the reference papers, there are two types of RACH optimization for RACH partitioning, one is RACH report enhancement and the other is network interface enhancement.

**RACH report enhancement**

The contents of RACH report from UE are basically decided by RAN2. RAN2 has agreed to discuss RACH partitioning for RACH report enhancement. So some companies propose RAN3 could let RAN2 to discuss the RACH report content first. However, some companies still think RAN3 can discuss the information that should be carried in the RACH report and ask RAN2 to evaluate these information.

It would be better to have a common understanding on the work split first.

**Q1: Which group do you think should discuss the RACH report contents first for RACH partitioning, RAN3 or RAN2?**

|  |  |  |
| --- | --- | --- |
| **Company** | **RAN3 or RAN2 or both?** | **Comments** |
| Huawei | Either way | In principle, enhancement to RACH report should be discussed and decided by RAN2. However, .it may be also helpful if RAN3 can achieve some consensus on the parameters for the sake of progress. |
| Ericsson | Both groups | As done in many other SON features, RAN3 can discuss whether any information is needed and should be part of the RA report and send an LS to RAN2 to let RAN2 know of the conclusions reached. |
| Qualcomm | RAN3 first | Similar view as E/// |
| Lenovo | Either way | Agree with HW |
| Intel | RAN2 | We noticed that RAN2 are also discussing the detailed parameters for RA report in this meeting. In order to avoid any contradicting decision between RAN2 and RAN3, we prefer RAN2 to discuss first, but RAN3 can provide comments to RAN2 if we have special concerns on any parameters. |
| ZTE | No strong view | No strong view. Slightly prefer RAN2 first, to avoid overlap in work. |
| CMCC | No strong view，but prefer RAN2 | RAN2 has agreed to discuss RACH partitioning for RACH report enhancement, and there is a pre-meeting summary that captures a lot of proposals for discussion. So we sligntly prefer RAN2 to discuss this first similar as we did in Rel-17. But if RAN3 can achieve some agreements on the information to report, we are also fine. |
| Samsung | Both groups | Same view as E///. We can follow the way as before. RAN3 can discuss the necessary information for RA optimization and send LS to RAN2. |
| Nokia | RAN3 first | similar view as E///, discussion on requirements are needed in RAN3 |

**Moderator summary：**

Based on the collected view, moderator doesn’t think we could reach consensus. So we may not need any proposal about this discussion. Business as usual, both groups can discuss, if RAN3 made some progress, we could inform RAN2.

Some companies provided detailed information to be included in the RACH report, including [5][6]

1. Feature priorities configured by network, which is the determining factor for selection of RACH partition for feature combination;
2. RA resources configured with feature indicator(s), which is the pool of RACH resources for RACH feature of feature combination;
3. a feature or feature combination triggering/initiating the random access procedure, which is the feature/feature combination UE intends to initiate;
4. a feature or feature combination applicable to the RACH procedure initiated with selected RA resource, which is the feature/feature combination UE finally successfully initiates;
5. Configuration info per RA attempt or the time from RA attempt to reporting
6. The actual information per RA attempt, such as SSB RSRP and MSG3 RSRP

**Q2: If we decide RAN3 to discuss the RACH report content first, which information of the above do you think should be included in the RACH report for RACH partitioning optimization?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Views** | **Comments** |
| Huawei |  | a, c, d, f  For b, we think that resources broadcasted in the SIB1 does not require UE reporting. |
| Ericsson | See comments | We support a, b, e  We believe that c, and, are the same thing and we support it.  For f, we need to better discuss the use case. It is also opportune to check whether the UE can provide RSRP measurements with such granularity |
| Qualcomm | d) | a- Feature priorities are used to determine which *FeatureCombinationPreambles* the UE shall use when a feature maps to more than one *FeatureCombinationPreambles* and this is configured via SIB1. Don’t see why UE needs to send this back in RA Report when gNB knows these priorities  b – Isn’t this same as the RA resources reported in Rel-16/Rel-17 RA Report? Feature/feature combination can be discussed in c) or d)  c – Not clear by “UE intends to initiate”  d - Yes  e – We understand this is proposed so that UE can identify the exact RA configuration used when multiple applicable PRACH resource configurations exist for the UE. What kind of “configuration info” is proposed here – PRACH Config Index? Time from RA attempt to reporting needs more discussion as well.  f – path loss information prior to RA procedure is already provided in Rel-17. Providing RSRP or path loss information per RA attempt is too much overhead and not very useful |
| Lenovo | c, d | For a and b, they are configured by the network, UE reporting is not needed. |
| Intel | c) | c) can help network learn the most preferred features in a specific area and thus help with further RACH partitioning configuration optimization.  For the others, in general, we don’t think UE needs to report any network configured parameters. |
| ZTE |  | we support a, c, d, e. |
| CMCC | C, d |  |
| Samsung | d e f | For a and b, as configuration is set by node, the time from RA attempt to reporting can help node to get the related configuration information. e) is better.  For c, it is a little bit unclear about the “UE intends to initiate”. No sure about whether it is same as the configuration? |
| CATT | C, d |  |
| Nokia | f | we expect configuration information should be avoided in the RA report because in principle already known by the network. Still the need for the network to apply variations of this configuration information should be addressed, e.g. as a function of time or other factors (service, slice, …?). |

**Moderator summary：**

|  |  |
| --- | --- |
| Proposals | Supported companies |
| a | HW, Ericsson, ZTE |
| b | Ericsson |
| c | HW, Ericsson, Lenovo, Intel, ZTE, CMCC, CATT |
| d | HW, Ericsson, Lenovo, ZTE, CMCC, Samsung, CATT, Qualcomm |
| e | Ericsson, ZTE, Samsung |
| f | Nokia |

Based on the summary, full consensus is not achieved. So moderator makes proposal following the large majority.

**Proposal 1: RA report is enhanced to include feature combination related information for RACH partitioning optimization. FFS whether it should be the feature/feature combination UE intends to initiate and/or feature/feature combination UE finally successfully initiates.**

To be continued on the following information:

* Feature priorities configured by network, which is the determining factor for selection of RACH partition for feature combination;
* RA resources configured with feature indicator(s), which is the pool of RACH resources for RACH feature of feature combination;
* Configuration info per RA attempt or the time from RA attempt to reporting
* The actual information per RA attempt, such as SSB RSRP and MSG3 RSRP

**Network interface enhancement**

The following two proposals for F1/Xn interface has been raised,

**P1: Exchange the additional RACH configurations (feature and feature combination specific RACH configurations) over Xn and F1 [2]**

P2: The gNB-DU shall be able to indicate to the gNB-CU [3]:

* either the result of local actions for PRACH conflict avoidance and resource optimisation,
* or the need of more neighbors’ PRACH reconfigurations to resolve a persistent PRACH conflict.

**Q3: Do you support the above proposals on network interface enhancement?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes or No for P1 and P2？** | **Comments** |
| Huawei | No for P1. For P2, no strong view. | For proposal 1, we think that the current PRACH configurations exchanged over Xn already covered the PRACH resources for RACH partition. |
| Ericsson | Support P2. For P1 see comments | For P1 we need to have a better discussion on the use case for this enhancements because the signalling of each dedicated RACH partition may blow interface messages out of proportion. We could have up to 256 RACH partitions per cell and if this is reported for a large number of cells message sizes might considerably increase. |
| Qualcomm | P1 – yes  P2 – Probably no | P1 – Current PRACH configurations exchanged over Xn don’t cover the feature combination specific PRACH configurations (RAN2 has defined up to 256 additional PRACH configurations for the RACH partitions). Therefore, we need to exchange the feature combination specific preambles as well to avoid PRACH configuration conflict. We can discuss how to control backhaul signaling overhead, but we should at least acknowledge the problem  **Alternative Proposal for P1: RAN3 should specify solutions to prevent PRACH configuration conflict considering the feature combination specific RACH resources e.g., by exchanging the feature combination specific RACH resources with neighboring gNBs**  P2 – Both of these were discussed in Rel-17 and not agreed. No big need to discuss it again in Rel-18 |
| Intel |  | P1: *ACCESS AND MOBILITY INDICATION* message which includes RACH Report List, can be reused for transfer. No RAN3 spec impact. |
| ZTE | P1 : Probably no  P2: no | for P1, we need consider the signaling overhead over interface.  for P2, share same view as Qualcomm. |
| CMCC | No | P1:The use case is not clear  P2: it has been discussed in Rel-17 although now it is further discussed in the context of RACH partitioning |
| Samsung | Fine for 1. | Same view as QC. The partition related configuration exchange is required to solve the conflict. |
| CATT | P1 : no  P2: no | P1: Not justified. That One cell can have up to 256 RACH partitions doesn’t mean that one cell can have up to 256 set of PRACH resources. It is very common that multiple partitions partition one single PRACH resources by different RA occasions or preambles.  P2: Same view as Qualcomm. |
| Nokia | P1: probably yes  P2: not as worded above | P1: This is in our view part of PRACH configuration information that should be sent over F1.  P2: We believe that the main remaining problem in the standard is that it doesn't well support the scenario of RACH conflict where corrective action is needed at the aggressor side. We believe solving this requires enhancement in F1 signalling in both directions (DU->CU, CU->DU). |

**Moderator summary：**

For P1, 3 companies supported, 5 companies against, 1 company thinks no standard impacts.

For P2, 1 company supported, 4 companies against, 1 company no strong view, 1 company think the current wording is not ok

**No consensus on the above proposals.**

3.2 RACH report retrieval

In the current spec, there is no RA report availability indication over Uu and gNB-CU retrieves the RA report only based on its implementation. There are also some RACH causes e.g., beam failure recovery failure, no UL synchronization which are not aware of the gNB-CU. Hence gNB-CU might fail to retrieve the RA report in time. This issue was discussed in Rel-16/Rel-17 for a long time and was de-prioritized to Rel-18.

Basically, there are two candidate solutions to resolve the issue [2][4][5][7][8][9]

1. **Solution 1: UE based solution.**

UE indicates a RACH report availability indication to the network

1. **Solution 2: Network based solution**

gNB-DU indicates to gNB-CU about the availability of RACH reports when the occurrence of the RACH procedure is not known to the gNB-CU

Based on the reference papers, it seems there is still no consensus on which solution to select. It is beneficial to collect views on the pros and cons of each solution

**Q4: Which solution do you prefer and indicate the reasons?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Solution 1 or 2 or both?** | **Reasons** |
| Huawei | Either way is fine. Solution 1 is preferred if it can cover the MR-DC case. | If solution 1 can also work to indicate the availability of SN RA report to network, solution 1 is preferred. |
| Ericsson | Solution 2 | We need to consider that:   1. Even if RAN2 is ready to adopt Solution 1, this solution will not apply to legacy Ues, hence we will loose a large number of RACH reports concerning legacy Ues because these Ues will not be able to flag the availability of such reports and the network may never be able to retrieve them 2. Given the advanced stage in 5G release work (Rel18 is the 4th 5G release) it is possible that UE vendors will never implement the RA report availability flag   For these reasons we think that a network based solution is the most effective and also rather easy to specify. |
| Qualcomm | Slightly prefer solution 2 | Maybe Solution 2 is better based on E///’s comment. |
| Lenovo | Solution 1 or 2 is acceptable |  |
| Intel |  | No strong opinions, but one question: whether we can accept both options? If no, then we need to work closely with RAN2 on the option comparison. |
| ZTE | Solution 2 | We prefer solution2, even if solution1 can be agreed in RAN2, the situation would not be change because CU still has limited RACH information as DU. We also share same view as Ericsson, solution1 will not apply to legacy UEs. |
| CMCC | RAN3 can deicide solution 2, whether to support solution 1 depends on RAN2 | Similar comments as Ericsson |
| Samsung | OK for 1 or 2 |  |
| CATT | Solution 2 |  |
| Nokia | Solution 1 | It is important to support solution 1 for NR RACH optimization. So we prefer continued discussion in RAN2 on this matter, and could then consider some workaround based on network solution targeting legacy UEs, if needed. |

Another issue was brought up at this and last meeting that RA Report collected for the SN cells are not visible by the MN. Hence MN may not fetch the RACH reports pertinent to the SN unless it is notified of their existence and hence some Xn enhancements are needed for timely RA report retrieval of SN RA Reports.

**It is proposed in [2][3] that SN indicates the availability of RA reports to the MN, MN can fetch the RA report and transfer it to SN.**

**Q5: Do you agree with the above proposal?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes or no?** | **Comments** |
| Huawei | Depends on Q4 | See comments on Q4 |
| Ericsson | Yes | For the same reasons discussed in Q4 we believe that an indication from SN to MN that SN RA reports are available at the UE is the most effective and easy to specify way. |
| Qualcomm | Yes if Solution 2 is chosen in Q4 |  |
| Lenovo | See comments | The solution proposed in Q8 (i.e. UE should report the PSCell identity outside the RACH report to help the network forward the report to the correct node) can be used to indicate the MN to transfer the SN RA report to the SN.  Moderator: Just to clarify this question deals with how MN is aware of there is a SN RACH report to retrieve |
| Intel |  | Prefer to use a same rationale with Q4 |
| ZTE | Yes if Solution 2 is chosen |  |
| CMCC | Yes，if Solution 2 is chosen |  |
| Samsung | Depends on Q4 | It depends on Q4 conclusion. |
| CATT | Yes，if Solution 2 is chosen |  |
| Nokia | Depends on Q4 | It depends on Q4 conclusion. |

**Moderator summary：**

1. Solution 1 or Solution 2: 5 supports solution 2, 1 company supports solution 1, 3 companies either solution 1 or 2 is acceptable.

2. It seems all the companies are ok with the proposal that **“If solution 2 is applied, SN indicates the availability of RA reports to the MN, MN can fetch the RA report and transfer it to SN”**

**So following the majority views, moderator proposes the following two proposals.**

**Proposal 1: WA: RAN3 works on the network based solution for RACH report retrieval, i.e., gNB-DU indicates to gNB-CU about the availability of RACH reports when the occurrence of the RACH procedure is not known to the gNB-CU**

**Proposal 2: If the network based solution is agreed, SN should indicate the availability of RA reports to the MN, MN can fetch the RA report and transfer it to SN**

3.3 SN RACH report in MR-DC

RAN2 status in Rel-17

For SN RACH report in MR-DC, it is agreed in Rel-17 that UE reports the SN RACH report to the MN, and then MN sends the SN RACH report to SN. However, due to the time limitation, only NR-DC scenario is supported in RAN2.

RAN3 status in Rel-17

In Rel-17, based on RAN2 agreements, RAN3 worked on network interface signaling to support the RACH report for SN, i.e., introducing a new X2/Xn AP message i.e. ACCESS AND MOBILITY INDICATION to transfer the RACH Report from MN to SN.

However, regarding whether RAN3 has supported all the scenarios, i.e., EN-DC, (NG)EN-DC, NE-DC and NR-DC, companies still has different views. At least two companies point out that the RACH Report container over Xn interface in the current TS 38.423 contains only the RACH report in NR format [8][9], so they think NE-DC scenario is still not supported.

In RAN2#119-e, RAN2 discussed Rel-18 scope for SN RACH report enhancements and agreed to focus only on leftover issues for completing the work done in RAN3 in Rel-17 for the SN RACH reporting.

To reply to RAN2, it is firstly to have common understanding on the work that has been done in RAN3 in Rel-17 and then to identify the left issues that may impact RAN2 specification.

**Q6: Whether RAN3 has finished the work on network signaling in Rel-17 to forward the SN RACH report from MN to SN for all the MR-DC scenarios, i.e., EN-DC, (NG)EN-DC, NE-DC and NR-DC scenarios?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes or No?** | **Comments** |
| Huawei | yes |  |
| Ericsson | Yes | In our view RAN3 supports the EN-DC, (NG) EN-DC and NR-DC scenarios. We believe these use cases are sufficient and we do not see the need for further work triggered by RAN3. This is especially true if any extra use cases are not supported by RAN2. |
| QC | Yes | RAN3 specs in Rel-17 support NR-DC, EN-DC and (NG)EN-DC.  RAN2 specs in Rel-17 support NR-DC  In Rel-17, RAN3 ended up supporting beyond what RAN2 supports. We should discuss again whether we really need to support SN RA Reports for EN-DC, (NG) EN-DC, NE-DC in Rel-18 and inform RAN2 via reply LS. |
| Lenovo | No | RACH Report container over Xn interface in the current TS 38.423 contains only the RACH report in NR format, we also think NE-DC scenario is not supported yet. |
| Intel | Yes |  |
| ZTE | Yes | RAN3 supports the EN-DC, (NG) EN-DC and NR-DC in R17, no RAN3 work left. We would like to see RAN2 can support EN-DC/(NG)EN-DC in R17, however, it is up to RAN2. |
| CMCC | Yes for EN-DC, (NG)EN-DC and NR-DC scenarios, not for NE-DC | The RACH Report container over Xn interface in the current TS 38.423 contains only the RACH report in NR format, NE-DC scenario is not supported in Rel-17. |
| Samsung | Yes | Same view as E///, QC and ZTE. RAN3 spec is already support. It should be decided by RAN2. |
| CATT |  | Yes for EN-DC, (NG)EN-DC and NR-DC scenarios, not for NE-DC. Inform RAN2 that we already support EN-DC, (NG)EN-DC. |
| Nokia | Yes | No need for further work triggered by RAN3. |

**Q7: Do you agree to support SN RACH report for EN-DC, (NG)EN-DC and NE-DC scenarios as well in Rel-18?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes or No?** | **Comments** |
| Huawei | Yes |  |
| Ericsson | No | We should strictly support the use cases that RAN2 enables because there is no reason to support any more use cases without RAN2 support. In our view there is no need to support NE-DC in RAN3 right now. The remaining cases are already supported in RAN3. However, EN-DC use cases are not supported by RAN2, so there is no need to work on these use cases or to support them any more than the current specifications allow. |
| Qualcomm | No | NR-DC supported in Rel-17 is enough.  **No need to support SN RA Report for EN-DC and (NG)EN-DC in Rel-18** as this has impacts to LTE RRC spec (TS 36.331) as shown below and not much benefit (SN RA Report can be collected and reported once back to same RAT, no need of sending it to MN)  **No need to support SN RA Report for NE-DC in Rel-18** as this doesn’t have much benefit (same as above)  **In order to support SN RA Report in EN-DC and (NG)EN-DC:**   1. UE needs to include NR RA Report container in LTE RA Report and send it to MN **(TS 36.331 impacts)** 2. UE should report the NR PScell identity outside the NR RA Report container (i.e., in LTE format) to help the network forward the report to the correct node **(TS 36.331 impacts)** 3. MN would then send NR RA Report to SN via X2 (in case of EN-DC) and via Xn (in case of (NG)EN-DC) **(already supported)**   **In order to support SN RA Report in NE-DC:**   1. UE needs to include LTE RA Report container in NR RA Report and send it to MN **(TS 38.331 impacts)** 2. UE should report the LTE Pscell identity outside the LTE RA Report container (in NR format) to help the network forward the report to the correct node **(TS 38.331 impacts)** 3. MN would then send NR RA Report to SN via Xn **(already supported)** |
| Intel |  | As state above, Rel-18 scope for RAN2 is only to complete the leftover issues in Rel-17, which has already done by RAN3. So for RAN3 we can close this discussion. |
| ZTE | ask RAN2 | RAN3 specs already supports the EN-DC, (NG) EN-DC in R17, why not in R18? We also agree it is not good to support any use case without RAN2 support, so we suggest to ask RAN2 in reply LS, whether it is feasible to support SN RA report in EN-DC, (NG) EN-DC,NE-DC in R18. |
| CMCC | Yes for EN-DC, (NG)EN-DC, no for NE-DC | RAN2 Rel-17：NR-DC  RAN3 Rel-17: EN-DC, (NG)EN-DC and NR-DC  RAN2 has agreed to focus only on leftover issues for completing the work done in RAN3 in Rel-17 for the SN RACH reporting. RAN2 is asking RAN3 to clarify which work has been done in Rel-17.  So what RAN3 needs to reply is RAN3 supports EN-DC, (NG)EN-DC and NR-DC in Rel-17. NE-DC is not supported. |
| Samsung | Depends on RAN2 | Same view as ZTE. RAN3 spec already support. It depends on RAN2 conclusions. |
| CATT | Yes for EN-DC, (NG)EN-DC | Reply LS to RAN2 to indicate that RAN3 already support EN-DC, (NG)EN-DC. |
| Nokia | No | no need for further RAN3 support due to RAN2 situation, as argued by e.g. E/// |

**Moderator Summary：**

**It seems some companies mislead the questions but looking into the answers, the views from companies are clear.**

**All the companies agree that no need further work triggered by RAN3. RAN3 has supported EN-DC, (NG)EN-DC, and NR-DC scenarios in Rel-17.**

**It is proposed in [2][5][9] that UE should report the PScell identity outside the RACH report to help the network forward the report to the correct node. This could avoid MN to interpret the RA report from another RAT. Ask RAN2 to provide support in the reply LS.**

**Q8: Do you agree with the above proposal?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes or No?** | **Comments** |
| Huawei | Yes | LS is needed. |
| Ericsson | Yes | This could be discussed and an LS could be sent |
| Qualcomm | No | No need to support SN RA Report for EN-DC, (NG)EN-DC and NE-DC. This can be informed via reply LS to RAN2 |
| Lenovo | Yes |  |
| Intel | Yes |  |
| ZTE | Yes | LS is needed. |
| CMCC | Yes | Agree the proposal and inform RAN2 about our agreement together with the scenarios we supported in Rel-17 as in Q7 |
| Samsung | Yes |  |
| CATT | Yes | LS is needed |
| Nokia | Yes |  |

**Moderator Summary：**

**Large majority supports UE should report the PScell identity outside the RACH report to help the network forward the report to the correct node. We could inform this in the reply LS.**

**Proposal 1: RAN3 has supported EN-DC, (NG)EN-DC, and NR-DC scenarios in Rel-17. No further work will be triggered in RAN3.**

**Proposal 2: If RAN2 decides to support SN RA Report for EN-DC and (NG)EN-DC, UE should report the PScell identity outside the RACH report to help the network forward the report to the correct node**

**Proposal 3: The Reply LS to RAN2 captures the following,**

-     **RAN3 has supported EN-DC, (NG)EN-DC, and NR-DC scenarios in Rel-17. No further work will be triggered by RAN3 in Rel-18**

-     **If RAN2 decides to support SN RA Report for EN-DC and (NG)EN-DC, UE should report the PScell identity outside the RACH report to help the network forward the report to the correct node**

3.4 Other cases for RACH report optimization

It is proposed in [6] and [9] to consider RACH optimization for SDT in Rel-18.

Rel-17 has specified SDT mechanism to allow UE to transmit small data during 2-step/4-step RACH or configuration grant procedure. But whether and how the UE could send small data through RACH procedure follows the configuration from the gNB, e.g., RSRP threshold, data volume threshold to select SDT or non-SDT and time/frequency resources. All these configurations are different from normal RACH procedure. Improper configuration may deteriorate the performance of SDT. So SON optimization could be utilized to improve the performance of SDT.

**Q9: Do you support RACH optimization for SDT in Rel-18?**

|  |  |
| --- | --- |
| **Company** | **Views** |
| Huawei | Fine to cover this in rel-18 |
| Ericsson | SDT is not in scope of the current WID. We do not think it should be discussed as part of this work |
| Qualcomm | No. RA-SDT is not in WID scope. |
| Intel | No. Considering the workload and study time for this WI, we prefer not to consider anything that’s not captured in the WID. |
| ZTE | same view as E/// ,Qualcomm and Intel. |
| CMCC | We support this objective in Rel-18. Some comments to the above replies, the objective in the WID is RACH report optimization which is more general. RACH for SDT is at the same position as other objectives, e.g., RACH partitioning, RACH report retrieval etc. |
| Samsung | The description in WID is “RACH report”. It is not precluded by WID. And RA-SDT is a feature embedded into the RA procedure. So prefer to include RA-SDT into the RACH optimization. |
| Nokia | We see the workload issue in RAN3, and also believe there will be significant RAN2 impact, so seems hard to accommodate in Rel-18. |

**Moderator summary:**

No consensus on whether to support RACH optimization for SDT in Rel-18

**Proposal: RACH optimization for SDT can be addressed towards the end of the work item if time allows**

# Conclusion, Recommendations

# Reference

1. R3-225312, LS on SN RACH report status in R17 (RAN2) LS in
2. R3-225407, RACH optimization enhancements (Qualcomm Incorporated)
3. R3-225552, RACH Optimization enhancement (Ericsson)
4. R3-225592, On RACH Report retrieval (Nokia, Nokia Shanghai Bell)
5. R3-225642, (TPs to TS 38.473 and TS 38.423 BL CRs): Discussion on RACH optimisation (Huawei)
6. R3-225698, Discussion on SON for RACH (Samsung)
7. R3-225775, RACH report optimization (Intel Corporation)
8. R3-225791, Discussion on RACH enhancement (CATT)
9. R3-225807, SONMDT enhancement for RACH report (CMCC)
10. R3-225809, draft reply LS on SN RACH report status in Rel-17 (CMCC) LS out To: RAN2
11. R3-225867, Discussion on RACH report (ZTE)
12. R3-225508, Reply LS on SN RACH report status in R17 (Ericsson) LS out To: RAN2