**3GPP TSG RAN Plenary Meeting #88e RP-20xxxx**

**29th of June - 03rd of July, 2020**

**Agenda item: 9.10.14**

**Source: CMCC (Moderator)**

**Title:**  **Email discussion on Rel-17 SON/MDT**

**Document for: Discussion**

# Introduction

This document is a summary of the following email discussion,

*Goal: Finalize scope of the Rel17 SON/MDT item, provide WID sheet for approval accordingly.*

*Input contributions covered: 823, 1222*

*Moderator: Hu Nan (CMCC)*

**First phase:**

Based on RP-201222 (revision of RP-200768), RP-200823 and the reasons described in the flagged emails, the moderator would like to collect views on the proposed new objectives or refinements against the latest approved WID.

**Deadline**: 11:59h UTC 30th June

**Note**: if an objective does not receive any comments till the deadline, this objective is assumed agreeable to include in the WID.

**Second phase:**

Intermediate summary and an updated WID which captures the converged objectives are uploaded in the draft folder.

Deadline for further comments: 10:59 UTC 1st July

**Final conclusions for Chairman notes:**

Agree to include the following objectives in the WID

* **RACH optimisation enhancement**
* **MDT enhancement**
* **Load balancing enhancement**
* **MRO for SN change failure**
* **Inter-system load balancing**
* **MDT coexistence with IDC (LTE as baseline)**

**And agree to add the following sentence in the WID.**

**Depending on the progress of the work, the following objective may be discussed in the later part of the WI:**

* **NR-U related SON/MDT optimization which aims to reuse e.g. the existing NR-U measurements [RAN3, RAN2]**

**Revised WID for approval is in RP-2001281 (Revision of RP-201222)**

# Discussion

**Objective**: RACH optimisation enhancement (Rel-16 leftovers)

**Description:** PRACH conflict detection in CU-DU split case, X2AP signalling of PRACH configurations of neighbour cells and some other detailed parameters are agreed to postpone to Rel-17

|  |  |  |
| --- | --- | --- |
| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson | Yes |  |
| Qualcomm | Yes |  |
| Nokia | Yes |  |
| ZTE | Yes, current general description is fine. | Although it was agreed in RAN3#108-e that these RACH aspects were postponed to Rel-17, the current description is more general to capture all left issues, e.g., the RACH optimization enhancement also includes whether to introduce Root Sequence Index BFR, UE associated RACH indication procedure from DU to CU. |
| CATT | Yes | Propose to update as “RACH conflict detection in CU-DU split/EN-DC case” which aims to focus on Rel-16 leftover issue. |
| Samsung | Yes |  |
| vivo | Yes |  |
| Xiaomi | Yes |  |
| Huawei | Yes |  |
| Lenovo&MotM | Yes |  |
| China Unicom | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |

**Moderator summary: The objective is agreeable to include in the WID.**

**Objective**: MDT enhancement (Rel-16 leftovers)

**Description:** There are probably some enhancements on the MDT configuration over NG and Xn interface that are not finalized in Rel-16, e.g., beam related configuration, propagating Management Based MDT PLMN List always to the target NG-RAN during Xn handovers which is pending on SA3.

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| --- | --- | --- |
| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson | Yes |  |
| Qualcomm | Yes |  |
| Nokia | Yes |  |
| ZTE | In general yes, the details are analyzed in Reason column. | Current description (except NR-Unlicensed) in RP-201222 captures agreement achieved in R16 WI. While for the two topics listed above:  **For beam\_related\_configuration :**  The agreement in RAN3#108-e was “Do not support beam related configurations in M1 measurement for immediate MDT in Rel-16”. Therefore there was no consensus to captured this into Rel-17 working scope.  **For user consent propagating**:  Further discussion is needed based on LS reply from SA3. |
| CATT | Yes |  |
| Samsung | Yes |  |
| Vivo | Yes |  |
| Xiaomi | Yes |  |
| Huawei | Yes | MDT enhancement (Rel-16 leftovers) i.e. focus on topics discussed in rel-16 Data Collection WI |
| Lenovo&MotM | Yes |  |
| China Unicom | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |

**Moderator summary: The objective is agreeable to include in the WID and a general objective “MDT enhancement” is preferred.**

**Objective**: Load balancing enhancement (Rel-16 leftovers)

**Description:** including per-slicing load reporting, reporting of TNL load for fronthaul vs. backhaul, etc

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| --- | --- | --- |
| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson |  | Per-slicing load reporting was discussed early. We need to see more motivation to include it in the objective. |
| Qualcomm | Yes |  |
| Nokia | Yes | load reporting per slice, reporting of TNL load for fronthaul vs. backhaul was discussed in Rel16 and marked as Rel16 leftovers.  We are fine to make it a bit more general as proposed by rapporteur, but should be “load balancing enhancement (including load reporting per slice, etc.)”. |
| ZTE | Yes | **For slicing load reporting:**  We support to add this into working scope based on operator requirements. UL&DL Slice CAC in Rel-16 NR\_SON could not support shared slice scenario.  **For TNL load:**  We support it with contribution driven. |
| CATT | Yes | Similar view as Nokia to make the description more general. In fact, for load balance in EN-DC scenario, it is also not discussed due to limited time in Rel-16.It is fair to discuss in Rel-17 together with other open issue listed above. Propose to update as below:  “load balancing enhancement (including load reporting per slice, load balance for EN-DC, etc.)” |
| Samsung |  | Load balancing enhancement can be discussed. The description should be general. Which matric can be agreed is depending on further discussion in RAN3. |
| Vivo | No strong view |  |
| Xiaomi | Yes |  |
| Huawei -slicing | Yes | Slicing is a dynamic resource or the 5G network management and deserve a SON |
| Huawei – TNL load |  | TNL load fronthaul vs. backhaul needs clarification which load on which interface??? |
| Huawei -SUL | Yes | Another topic discussed in Rel-16 the reporting of CAC/PRB for SUL. We propose this is added to the objectives |
| Lenovo&MotM | Yes | We generally agree with Nokia. The general description is expected. |
| China Unicom | Yes |  |
| LGE | Yes | It seems to need general description. |
| Intel | Yes | We would actually prefer the description to be less generic and more focused, in order to streamline the discussion in RAN3. |

**Moderator summary: The objective is agreeable to include in the WID, but it seems only a general objective “Load balancing enhancement” can address all the concerns. The specific metric are not converged.**

**Objective (not flagged, companies seem fine with it)**: MRO for SN change failure (Rel-16 leftovers)

**Description:** MRO for SN change failure is agreed to postpone to Rel-17

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| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson | Yes |  |
| Qualcomm | Yes |  |
| Nokia | Yes |  |
| ZTE | Yes | It was agreed in RAN3#107-e and it is postponed to Rel-17 due to time limitation in R16. |
| CATT | Yes |  |
| Samsung | Yes |  |
| Vivo | Yes |  |
| Huawei | Yes |  |
| Lenovo&MotM | Yes |  |
| China Unicom | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |

**Moderator summary: The objective is agreeable to include in the WID.**

**Objective (not flagged, companies seem fine with it)**: Inter-system load balancing

**Description:**Load balancing features for intra-system have been specified in Rel-16. Operators have strong requirements to support inter-system (4G and 5G) load balancing in Rel-17.

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| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson | Yes |  |
| Qualcomm | Yes |  |
| Nokia | Yes |  |
| ZTE | Yes | It was already approved. |
| CATT | Yes |  |
| Samsung | Yes |  |
| Vivo | No strong view |  |
| Xiaomi | Yes |  |
| Huawei | yes |  |
| Lenovo&MotM | Yes |  |
| China Unicom | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |

**Moderator summary: The objective is agreeable to include in the WID.**

**Objective**: NR-U enhancement

**Description:**It is mentioned in RP-200823 that SON/MDT may also apply to NR-U with some enhancements, e.g., MLB to take into account resource conditions in NR-U cells, to provide measurements and reports, e.g. RLF/RA reports, that help the management and configuration of NR-U, MRO enhanced to consider failure cases pertinent to NR-U

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| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson | Yes  Propose to clarify the objective from “NR-Unlicensed optimization” to “NR- Unlicensed related SON/MDT optimization”, to limit the scope. | We could reuse the work we did for the Rel 16 NR-U, and to include them for SON/MDT. The impact will not be big. |
| Qualcomm | Yes |  |
| Nokia | Yes |  |
| ZTE | No | No discussion either in R16 SI or WI phase, further clarification is needed. |
| CATT |  | We are not quite sure whether we have enough TU to accommodate the new bullet. At the initial stage of the discussion on this WI, we have decided to only focus on 2-step RACH and Mobility enhancement. Considering the special situation now, we think it is better to discuss the introduction of more features in the subsequent RAN plenary meeting e.g. RAN#90 taking the progress in RAN2/RAN 3 into account. |
| Samsung | No | The initial objectives of the WI have been evaluated in Rel-16 SI and come out from the leftovers of Rel-16 WI. NR-U was not evaluated before. The impacts to include NR-U in the WI are not clear. Considering the efficiency of the email discussion, we prefer not to increase the scope. |
| Vivo | Yes |  |
| Xiaomi | Yes |  |
| Huawei |  | What is the pain vs gain? And work load related to NR-U?? We suspect lot of intensive work for non-urgent matter, and the propose to have it as best effort. |
| Lenovo&MotM | Yes | The mobility failure associated with shared spectrum and licensed spectrum should be differentiated. |
| China Unicom | No | Share the view with ZTE and CATT. We should focus on the determined leftover enhancement in R16. Additional features need more evaluation. |
| LGE |  | Because NR-U was not evaluated during NR SON/MDT SI phase, the impact related to NR-U is not clear. Further clarification is needed. |
| Intel |  | If we are to add this, we better have a well defined scope. |

**Moderator summary: No consensus achieved**

**Objective**: NPN and IDC

**Description:**It is mentioned in the flagged email MDT coexistence with NPN and IDC need to be considered

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| Companies | support to include it into objectives （yes/no） | Reason |
| Ericsson |  | Our concern is that NPN might be a big scope, e.g. needs the SA-RAN coordination.  IDC would be fine to be included. |
| Qualcomm |  | Similar view as Ericsson regarding NPN. Okay to include in Rel-17 if scope is identified and defined.  IDC should be fine to include assuming similar handling as LTE. |
| Nokia | Yes | We propose to clarify a bit more on RAN2 scope with the following addition “*Enhancement of logged and immediate MDT (for MR-DC, coexistence with NPN and IDC) [RAN2, RAN3]*”since these three features have been addressed in Rel16 and concluded to be postponed. NPN/IDC aspects are important and the is limited to MDT, which should not become so big.  Further clarification:  - MDT for MR-DC, as the MDT applicability to EN-DC was the only deployment from Dual Connectivity deployments selected for specification, due to lack of time  - Coexistence of MDT functionality with NPN networks and IDC features, as SNPN networks presence affect checking of network id (which is now only PLMNid ) before RLFreport for secure reporting  - Coexistence of MDT functionality with IDC feature, as LTE baseline cover this relation and mark logged MDT data whenever they are polluted by IDC interferences. This coexistence was already present in some early stage of stage 3 running CR, but decided to be postponed. |
| ZTE |  | Regarding NPN, share the view with Ericsson and Qualcomm.  Regarding IDC, fine but it should limit the scope similar to LTE. |
| CATT |  | Similar view with Ericsson, Qualcomm and ZTE |
| Samsung |  | Regarding NPN, share the view with Ericsson and Qualcomm.  For IDC, we needs to understand what needs to be done first. Could someone clarify what has been done in LTE for SON/MDT? |
| Vivo | Yes for IDC | MDT measurement result can be impacted by IDC effect. So, measurement result with IDC effect may be different from MDT measurement without IDC effect. Thus, network should know whether the measurement result is performed under IDC or not. Otherwise MDT measurement may not useful. Therefore, IDC should be included to improve the measurement result accuracy for both logged MDT and immediate MDT. |
| Xiaomi | Yes |  |
| Huawei | Yes | We support IDC.  NPN seems acceptable with Nokia clarification, should be also considered as best effort… |
| Lenovo&MotM |  | Agree with Ericsson and QC for NPN scope.  We are fine to add IDC since NR has the similar mechanism of IDC. |
| China Unicom |  | For NPN, it's going to be a heavy workload, still have concern about no enough time.  For IDC, we are fine. |
| LGE |  | Similar view as Ericsson. |
| Intel |  | OK to include, if the scope is well defined |

**Moderator summary: The objective of “coexistence with IDC” is agreeable. No consensus achieved on NPN**

**WID refinement**: Successful HO report in SON and/or MDT part?

**Description:**It is mentioned in the flagged email that successful HO report is a SON feature and has been included in the SON part.

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| Companies | Views | Reason |
| Ericsson | Our understanding is the aspect is not covered in rel-16 due to the lack of time.  It is fine to be included in Rel 17. |  |
| Qualcomm | We see relatively limited benefit in including successful HO report in SON/MDT WI. Could be a candidate to omit to keep the overall scope under control. |  |
| Nokia | This is not covered in Rel16, and fine to be included in Rel17. |  |
| ZTE | We can keep the feature in the working scope with low priority, which is pending on RAN2 discussion. | It was discussed in R16 with the conclusion as “Pending RAN2 discussion, but RAN2 will not discuss this in Rel-16 ” |
| CATT | Since it is ReL-16 left over, it is OK to discuss in Rel-17. |  |
| Samsung | It is fine to be included in Rel-17. | I guess companies may mis-understand the question. Successful HO report is in Rel-16 scope and postponed to Rel-17. It should be in the scope of Rel-17.  It was included in MDT bullet in the revised WI, the comment is that it should be in SON bullet. |
| Vivo | Successful HO report in SON may be useful, but we do think the benefit is quite significant to increase the workload by including it in the WI scope. |  |
| Xiaomi | fine to be included in R17 |  |
| Huawei | Support, it should be in rel-17 |  |
| Lenovo&MotM | We are fine to include it. But, this part can be considered as second priority. Namely, if time is enough, it can be optimized. |  |
| China Unicom | R16 leftover and OK to discuss in R17. |  |
|  | It is fine to be included in Rel-17. |  |
| Intel | OK to include |  |

**Moderator summary: Companies seem misunderstand the question. This objective is already in the WID approved at RAN #86. The question is it exists in two places, whether to keep both or remove one. It is proposed to keep as it is in the approved WID if no further comments received.**

**Other proposals:**

|  |  |
| --- | --- |
| Companies | Proposals |
| ZTE | Keep the R17 WI scope in a reasonable range. |
| Huawei | None left over new item should be as low priority, best effort considering RAN3 is already overloaded |
| Lenovo&MotM | To clarify the prioritization of the objectives in order to ensure the reasonable scope. |
|  |  |

# Summary

Observations during the initial comments collection phase

1. The objectives that are converged to include in the WID include:

* RACH optimisation enhancement
* MDT enhancement
* Load balancing enhancement
* MRO for SN change failure
* Inter-system load balancing
* MDT coexistence with IDC (LTE as baseline)

1. The objectives that are NOT converged to include in the WID include:

* NR-U enhancement
* MDT coexistence with NPN

1. Regarding successful HO report, companies seem misunderstand the question. This objective is already in the WID approved at RAN #86. The question is it exists in two places, whether to keep both or remove one. It is proposed to keep as it is in the approved WID if no further comments received.

**Proposal: Agree to include the following objectives in the WID**

* **RACH optimisation enhancement**
* **MDT enhancement**
* **Load balancing enhancement**
* **MRO for SN change failure**
* **Inter-system load balancing**
* **MDT coexistence with IDC (LTE as baseline)**

And add the following sentence in the WID.

**Depending on the progress of the work, the following objective may be discussed in the later part of the WI:**

* **NR-U related SON/MDT optimization which aims to reuse e.g. the existing NR-U measurements [RAN3, RAN2]**