3GPP TSG-RAN WG3 Meeting #114-e R3-215870

E-meeting, 1 – 11 November, 2021

**Agenda item: 15.4**

**Source: Nokia - moderator**

**Title: CB: # QoE6\_MDTAlignment - Summary of email discussion**

**Document for: Approval**

# 1 Introduction

This paper provides summary of discussions at RAN#114-e on:

**CB: # QoE6\_MDTAlignment**

**- Turn WAs from last meeting to agreements?**

**- Discuss the approach for MDT and QoE alignment for the two cases: MDT and QoE measurements are configured simultaneously; MDT is configured before QoE. Network based solution? UE- assisted solution?**

**- how to support the correlation between MDT and QoE reports?**

**- Provide TPs if agreeable**

**- Capture agreements and open issues**

(Nok - moderator)

Status from RAN3#113-e is as follows:

Postpone the discussion on alignment for the case that MDT is configured before QoE configuration till clarification is received from SA5 on QoE activation/deactivation procedure (i.e., whether to reuse trace function for QoE and if multiple trace sessions can be supported).

An indicator is required in the QoE configuration to NG-RAN to inform whether it should perform MDT and QoE measurements in a time-aligned manner. FFS whether an explicit or implicit indicator.

WA: NG-RAN should include Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE

WA: NG-RAN should NOT include the Trace Reference and Trace Recording Session Reference in the QoE configuration sent to UE

NG-RAN can include session start and session end time stamp information related to MDT and QoE reports autonomously (e.g., using the same clock for MDT and QoE )to assist the correlation entity. FFS whether UE also assists with time stamp information (e.g., start/stop time or via application layer timing information)

QoE and related MDT report can be sent to the same collection entity.

FFS whether to support the scenario that the MDT measurements are used only for QoE analysis.

FFS on the approach for aligning the MDT and QoE measurements i.e., whether to use a network based solution (e.g. OAM should activate/deactivate appropriately) or a UE assisted solution (e.g. UE indicates start/stop time of QoE, UE keeps MDT config pending at RRC till session starts)

FFS whether radio related information should be included.

FFS whether to include QoE reference in MDT configuration sent to NG-RAN

FFS whether to include the QoE reference in MDT configuration sent to UE

FFS whether to include QoE reference in MDT report sent to TCE

FFS whether and how to achieve alignment in case QoE reporting is paused

The deadline for phase I of this discussion to be aligned with the other QoE discussions, and in any case no later than Friday, Nov. 5, EOB.

# 2 For the Chairman’s Notes

[To be completed]

# 3 Discussion

## 3.1 Issue 1 - Whether to support start of MDT reporting synchronized with QMC

The following FFS was captured at last meeting:

FFS whether to support the scenario that the MDT measurements are used only for QoE analysis.

In this scenario it is understood that MDT measurement reporting (provided by the UE, provided by the gNB) are required only when the corresponding QMC is active (i.e. the application session( is running and collecting/reporting QoE measurements). Support of this scenario is described as "*beneficial and efficient*" in TR 38.890, but the captured FFS shows that there is so far no work item phase agreement.

**Q1: Is such mechanism needed?**

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| Company | Comment |
| Qualcomm | No. We don’t see a scenario where MDT measurements are used only for QoE analysis (this is an unrealistic scenario where there are no radio related optimizations or QoS monitoring required in the network, but we just need MDT measurements for correlating with QoE).  Also, MDT and QMC are two independent mechanisms and each of them should be able to exist with/without the other. |
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## 3.2 Issue 2 - How to support start of MDT reporting synchronized with QMC

Some options for such mechanism were discussed at last meeting, captured as follows:

FFS on the approach for aligning the MDT and QoE measurements i.e., whether to use a network based solution (e.g. OAM should activate/deactivate appropriately) or a UE assisted solution (e.g. UE indicates start/stop time of QoE, UE keeps MDT config pending at RRC till session starts)

List of options (please feel free to add further options the moderator might have missed):

* Option 1: OAM should activate/deactivate appropriately
* Option 2: UE indicates start/stop of QMC to the gNB (application session start, QMC end)
* Option 3: UE access stratum keeps MDT configuration pending until the application layer session starts

**Q2: Please indicate your preference (at least companies replying positively to Q1).**

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| Company | Comment |
| Qualcomm | Option 1.  Option 2 as a “UE assistance” to gNB to help configure MDT only upon session start indication is again based on the assumption that MDT is used only for QoE analysis and such a scenario is very rare. Also, this alignment will be harder to achieve with multiple QoE configurations and corresponding different session start/end times. We think it’s best if it can be left to OAM to configure MDT and QoE accordingly.  Option 3 is also restrictive on MDT configuration (see comments to Q1) and introduces a new “suspend” mechanism at RRC in the UE. |
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## 3.3 Issue 3 - Multiple QMC sessions associated with MDT measurements

5121 proposes: "*The duration of QoE associated MDT should cover all the QoE sessions if multiple QoE session configured*".

**Q3: Do you see standards impact from the above proposal, and should this be supported?**

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| Company | Comment |
| Qualcomm | Proposal is not clear. Does this mean we have to keep the MDT session running if there are multiple QMC sessions (received consecutively) for which alignment is desired? But what if that MDT session is going to end e.g., if T330 of logged MDT is going to expire; Do we have to extend it then?  We propose to not introduce any new UE behaviour for such handling. |
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## 3.4 Issue 4 - QMC/MDT alignment based on reference

The following was captured at last meeting:

WA: NG-RAN should include Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE

FFS whether to include QoE reference in MDT configuration sent to NG-RAN

FFS whether to include QoE reference in MDT report sent to TCE

Also the following open point was captured: "FFS whether to include the QoE reference in MDT configuration sent to UE", but it is the moderator's understanding that RAN2 in parallel decided to use short RRC id instead of sending the QoE reference to the UE. Therefore also the following working assumption may be confirmed: "WA: NG-RAN should NOT include the Trace Reference and Trace Recording Session Reference in the QoE configuration sent to UE".

**Q4: Which references are required sent to the gNB (s-based activation, m-based activation) and to the TCE/MCE? In the reply, please also clarify which option from issue 2, if any, that is intended supported.**

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| Company | Comment |
| Qualcomm | OAM can include the following in the **QoE configuration** as an **implicit indicator** to NG-RAN that it should forward the QoE report to MCE along with the MDT related trace details:   * For s-based QoE, add NG-RAN Trace ID of the MDT configuration * For m-based QoE, add Trace Reference of the MDT configuration   If the implicit flag is present in QoE configuration, NG-RAN can include the Trace Reference and Trace Recording Session Reference in the **QoE report** sent to MCE for correlation purposes  **No Uu impact for QoE configuration and QoE report**   * There is no need for NG-RAN to include the Trace Reference and Trace Recording Session Reference in the QoE configuration sent to UE * There is no need for UE to include the Trace Reference and Trace Recording Session Reference in the QoE report sent to NG-RAN   **No need to enhance MDT configuration and reporting** for QoE-MDT correlation as this will lead to duplicate correlation work at both MCE and TCE   * There is no need for OAM/AMF to include QoE reference in MDT configuration sent to NG-RAN * There is no need for NG-RAN to include QoE Reference or shortened RRC ID in the MDT configuration sent to UE * There is no need for UE to include Trace reference in the immediate MDT report sent to NG-RAN (NG-RAN is aware of the trace session configured for a given UE and sends immediate MDT results to TCE). * There is no need for UE to include QoE Reference or shortened RRC ID in the MDT report sent to NG-RAN |
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## 3.5 Issue 5 - QMC/MDT time alignment

The following was captured at last meeting:

An indicator is required in the QoE configuration to NG-RAN to inform whether it should perform MDT and QoE measurements in a time-aligned manner. FFS whether an explicit or implicit indicator.

NG-RAN can include session start and session end time stamp information related to MDT and QoE reports autonomously (e.g., using the same clock for MDT and QoE )to assist the correlation entity. FFS whether UE also assists with time stamp information (e.g., start/stop time or via application layer timing information)

**Q5: Please provide your view on indicator mentioned above, and whether the UE needs to provide time stamp information, e.g. several companies mentioned UE timer reported in case of paused reporting (overload).**

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| Company | Comment |
| Qualcomm | Please see Issue 4 for the indicator related comments. Also, it is proposed to reword the agreement as “An indicator is required in the QoE configuration to NG-RAN to inform whether it should ~~perform MDT and QoE measurements in a time-aligned manner~~ forward the QoE report to MCE along with the MDT related trace details.” (NG-RAN doesn’t perform MDT and QoE measurements in a time aligned manner)  Whether UE provides start/stop time is related to Issue 2 (let’s discuss it there). Also, we agreed that “NG-RAN can include session start and session end time stamp information related to MDT and QoE reports **autonomously** (e.g., using the same clock for MDT and QoE ) to assist the correlation entity”. When NG-RAN can provide some kind of timing information (reception time of MDT and QoE reports etc.) **autonomously**, we don’t see much value in UE as well indicating time stamp information in the QoE report.  UE timer in case of paused reporting can be considered later once we have consensus on Issue 2. |
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## 3.6 Issue 6 - Activation scenarios

4732 includes the following proposal (P12):

**Capture in Stage-2 specification that the Alignment between QoE and MDT measurements is valid for the following scenarios:**

* **M-based QoE and m-based MDT.**
* **S-based QoE and s-based MDT.**
* **S-based QOE and m-based MDT.**

**Q6: Please provide your view.**

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| Company | Comment |
| Qualcomm | Seems OK. But is this really necessary (what value is it adding by mentioning in stage-2 specs)? Irrespective of whether we go for an OAM or UE based solution (related to Issue 2), there shouldn’t be any stage-3 impacts right? |
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## 3.7 Issue 7 - Handling of RVQOE

4732 includes the following proposal (P13):

**The alignment of RVQoE and MDT measurements reuses the solution for the alignment of legacy QoE and MDT measurements. RAN node can reuse RRM measurements as well.**

**Q7: Please provide your view.**

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| Company | Comment |
| Qualcomm | Similar to OAM based alignment, NG-RAN can configure RVQoE and MDT at the same time in case an alignment is required. We don’t see any spec impacts for this. |
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## 3.8 Other

Please indicate here other proposals that the moderator may not have covered by the questions above, and which the proponent believes need handling at this meeting. TPs/LSs to be handled in phase II depending on outcome of phase I.

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# 4 Conclusion, Recommendations [if needed]

If needed

# 5 References

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| [R3-214732](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-214732.zip) | The Alignment of Radio-Related Measurements and QoE Measurements (Ericsson) | discussion |
| [R3-214912](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-214912.zip) | Alignment of Radio-Related Measurement and QoE Measurements (Qualcomm Incorporated) | discussion |
| [R3-215121](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215121.zip) | Discussion on Alignment of MDT and QoE Measurements (CATT) | discussion |
| [R3-215313](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215313.zip) | Remaining open issues for alignment of radio-related measurements and QoE measurements (Nokia, Nokia Shanghai Bell) | discussion |
| [R3-215548](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215548.zip) | Alignment of MDT and QoE (Samsung) | discussion |
| [R3-215661](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215661.zip) | Further discussions on RAN related measurements and information (Huawei) | discussion |
| [R3-215667](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215667.zip) | Further discussion on alignment of MDT and QoE Measurements (ZTE, China Telecom, China Unicom) | discussion |
| [R3-215668](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215668.zip) | (TP for 38.401) Alignment of MDT and QoE Measurements (ZTE, China Telecom, China Unicom) | other |
| [R3-215669](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215669.zip) | (TP for E1/F1) Alignment of Radio-Related Measurement and QoE Measurements (ZTE, China Telecom) | other |
| [R3-215688](https://qualcomm-my.sharepoint.com/personal/shakrish_qti_qualcomm_com/Documents/Desktop/Dropbox/Pentari%20Systems/RAN3/114-e/CB/CB%20%23%20QoE6_MDTAlignment/Docs/R3-215688.zip) | Remaining open issues on alignment of radio related measurement and QoE measurement (CMCC) | discussion |