3GPP TSG-RAN WG3 Meeting #114-e R3-216179

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

[For some issues, the summary per issue provides some background information. Some proposed agreements have dependencies pointed out by companies (see brackets with comments), and if needed we can handle these by email or in online session.]

**For alignment of MDT and QoE measurement reporting, OAM may activate/deactivate appropriately.**

**In Rel-17, no UE assisted solution is needed (e.g. UE indicates start/stop time of QoE, or UE keeps MDT config pending at RRC till session starts).**

**No RAN3 specification impact is needed in Rel-17 to ensure that the duration of QoE associated MDT covers all the QoE sessions if multiple QoE session configured.** (UE start/stop time of QoE might still be needed for correlation?)

**In case of aligned MDT/QMC (s-based activation), OAM includes Trace Reference and Trace Recording Session Reference of the MDT configuration in the QMC configuration sent to NG-RAN.**

**In case of aligned MDT/QMC (m-based activation), OAM includes Trace Reference of the MDT configuration in the QMC configuration sent to NG-RAN.** (if the "m-based QMC m-based MDT" activation scenario is supported, see issue 6. Also one company believes that the OAM additionally has to include the QoE reference of the QMC configuration in MDT configuration sent to NG-RAN in order to enable the gNB to select same UEs for MDT and QMC).

**(WA turned into agreement) In case of aligned MDT/QMC, NG-RAN includes Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE.** (“FFS whether other info is needed”? Are TR/TRSR enough to uniquely identify the UE?)

**The gNB does NOT include QoE reference in MDT report sent to the TCE.**

**FFS: NG-RAN does NOT include the QoE reference in MDT configuration sent to UE.**

**(WA turned into agreement) If RAN nodes are responsible for passing the mapping relation during mobility, NG-RAN node does not include the Trace Reference and Trace Recording Session Reference of the MDT session in QoE configuration sent to UE.**

**An indicator (TR/TRSR?) is required in the QoE configuration to NG-RAN to inform whether it should forward the QoE report to MCE along with the MDT related trace details.**

**To enable time alignment between an already ongoing Immediate MDT and a QoE measurement started later, the start time and end time of the QoE measurement, in addition to the Trace Reference and Trace Recording Session ID, needs to be added to the QoE measurement report at the NG-RAN node.**

**NG-RAN can include session start and session end time stamp information related to MDT and QoE reports autonomously, using the same clock for MDT and QoE to assist the correlation entity.** (session start and session end time stamp info needed from the UE?)

**FFS: In case of alignment between MDT and a paused QoE, UE reports the time elapsed between generating the QoE report and the time of reporting the QoE report i.e., when reporting is resumed.**

**Rel-17 NR QMC to support the following activation scenario: S-based QoE and s-based MDT, M-based QoE and m-based MDT.**

**FFS: Rel-17 NR QMC will not support the following activation scenarios: S-based QoE and m-based MDT.**

**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.**

**To be continued: MDT/QMC alignment in split architecture scenarios**

# 3 Discussion - 1st round

## 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. |
| Huawei | We think it is beneficial to support radio related measurement, but not sure what “are used only for QoE analysis” means? MDT could be an independent measurement, could be configured together with QoE measurement. |
| **Ericsson** | Whatever we decide wrt this FFS, nothing stops the OAM to activate them at the same time. I suppose this is what is referred to as “MDT only for QoE”.  |
| ZTE | Share the view with QC and HW. MDT is an independent measurement, which does not only exist for QoE. The case that MDT is only used for QoE is unrealistic. |
| Samsung | The scenario is possible, but the description here may be misleading.Image there is an optimization task, e.g. cluster drive test by using a test device, it is possible to collect MDT and QoE at the same time, and MDT and QoE can be used for drive test analysis together, below is an example, In this case, we cannot say whether it’s MDT for QoE analysis or QoE for MDT analysis, they’re for the same optimization purpose, **optimization engineer can consider both of them when analyze network problems, so they are definitely activated at the same time for the same optimization purpose**.As E/// comment, nothing stops OAM to activate them at the same time, which had already be agreed in previous meeting. |
| CMCC | We see scenario when m-based MDT is configured upon triggering QoE measurement. |
| CATT | We should support this case. We can trigger one new MDT when the QMC is ongoing. Maybe this MDT only for QMC correlation  |
| Nokia | Standards support for such mechanism is not needed in a basic Rel-17 framework, but can be considered in later releases. |

### 3.1.1 Summary of issue 1

Out of 8 companies, at least two reply 'yes' and three reply 'no'. But there seems to be different interpretations of the mentioned FFS, and there could be some overlap between Q1 and Q2. We therefore don't conclude on this issue but propose to focus on Q2.

## 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).**

|  |  |
| --- | --- |
| 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. |
| Huawei | We think as long as OAM knows the starting and ending of MDT measurement, OAM is able to correlate with the corresponding QoE measurement report.In our understanding, the MCE can perform the correlation based on the time stamp and others. RAN3 and RAN2 does not need to introduce any other mechanisms.  |
| **Ericsson** | **Option 1** – this is always supported - nothing stops the OAM from configuring the measurements at the same time.**Option 2** – this should also be supported. Perhaps the following needs to be added to the description of Option 2: “Upon receiving the start indication from the UE, the RAN configures the UE with an Immediate MDT configuration”. |
| ZTE | Option 1.We prefer the network based solution. It has been agreed at previous meeting that OAM can configure MDT and QoE simultaneously. The alignment can be simply achieved in this way.We don’t think there is a need on UE sending the assistance information about the start/stop of QMC session as in Option 2. And in our mind, MDT should be independent with QMC, which means the start/stop of MDT should not be pending the start/stop of QMC, so we don’t prefer Option3. |
| Samsung | Option 2, same view as E///. |
| CMCC | Both Option1 and 2.Option 2 could be helpful in case of m-based MDT (if m-based MDT is not configured to a UE within the area scope, then the MDT configuration will be sent to UE as soon as QoE session is indicated from UE). |
| CATT | Option 1, the MDT may start far early than the QMC starting because the MDT will start after it is configured and the QMC will start after session starts. This case always supported but it does not synchronized between MDT and QMC Option 2 and option 3 meet the requirement on synchronized with QMC. The option 3 should introduce the suspension on the MDT.Option 3 is preferred because it save signalling  |
| Nokia | As mentioned under issue 1, none of these options are needed in a basic Rel-17 framework, but can be considered in later releases. |

### 3.2.1 Summary of issue 2

It is understood that option 1 (OAM) will not have RAN3 impact and is always supported.

3 out of 8 companies are in favour of option 2.

1 out of 8 companies are in favour of option 3.

We therefore propose that the FFS can be solved as follows:

**For alignment of MDT and QoE measurement reporting, OAM may activate/deactivate appropriately. In Rel-17, no UE assisted solution is needed (e.g. UE indicates start/stop time of QoE, or UE keeps MDT config pending at RRC till session starts).**

## 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. |
| Huawei | In our understanding, MDT is AS layer measurement while QoE is application layer measurement, we think all application layer behaviour is on top of AS layer behaviour. We do not see any standards impact. |
| **Ericsson** | This could be allowed but need not be mandated. We are not sure if there is any specification impact. |
| ZTE | We don’t think this proposal is needed. As we have stated above, the MDT measurement should be independent on QMC, i.e., we are not to change the configuration or reporting of MDT, of course the running session should also not be affected.  |
| Samsung | Seems possible, but the use cases are not clear. |
| CMCC | We see potential impact to 38300 if such proposal is agreeable. |
| CATT | If we would enable the alignment MDT and QMC, we should assure the MDT running when the QMC is running; the MDT will not be released/stop. Also we proposed **The existing running MDT cannot be deactivated before QoE measurements stop if one QoE associated with it**Stg2 spec maybe impact |
| Nokia | We believe the scenario discussed in 5121 would need standards support if synchronized MDT/QMC is to be supported. However the simplest would be to not provide standards support for synchronized MDT/QMC in Rel-17 as per our answers above. |

### 3.3.1 Summary of issue 3

Based on the outcome of issue 2, there seems to be no need to further consider this scenario in Rel-17.

**No RAN3 specification impact is needed in Rel-17 to ensure that the duration of QoE associated MDT covers all the QoE sessions if multiple QoE session configured.**

## 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
 |
| Huawei | The intention is to correlated MDT report with the QoE report, not the opposite. If we include both report to the address where the QMC is configured to report, then the correlation is done. With this understanding, we think Trace Reference and Trace Recording Session Reference need to be sent to MCE, we are not sure what else is needed. |
| **Ericsson** | **To the RAN**, inside the QoE configuration:* S-based: NG-RAN Trace ID of the MDT measurement configuration.
* M-based: Trace Reference of the MDT measurement configuration.

**From RAN to the MCE**, inside the QoE report: a combination of Trace Reference and Trace Recording Session Reference (added by RAN).The RAN node does NOT need to add a combination of Trace Reference and Trace Recording Session Reference in the QoE configuration sent to the UE. The RAN node does NOT add a QoE Reference to the MDT report sent to the TCE. To enable time alignment between an already ongoing Immediate MDT and a QoE measurement started later, the start time and end time of the QoE measurement, in addition to the Trace Reference and Trace Recording Session ID, needs to be added to the QoE measurement report at the NG-RAN node. |
| ZTE | Trace ID can be included by OAM in the QoE configuration, as an implicit indicator to notify RAN to send the QoE and MDT reports to MCE for correlation. Maybe specifically, as listed by QC, for m-based, it should be NG-RAN Trace ID; for s-based, it represents as Trace Reference.And we are fine to agree on the WA that “NG-RAN should include Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE”.We also share the view with QC on:**No Uu impact for QoE configuration and QoE report****No need to enhance MDT configuration and reporting** for QoE-MDT correlation |
| Samsung  | We are fine if majority support NG-RAN include Trace ID in QoE report. Then as we analyzed in [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), **there is an issue when QoE report is paused in the source gNB and resumed in the target gNB**, and if the MDT is m-based MDT, the target gNB is not aware of the trace id of the source gNB, so the mapping relation between the QoE reference and trace ID of the source gNB should be transferred from source gNB and target gNB.So we propose:**Proposal 9, if Trace ID is used for correlation, RAN3 agrees either transfer the mapping relation between QoE reference and Trace ID over Xn so that gNB can include the Trace ID in QoE report or transfer the Trace ID to UE so that UE can include the Trace ID in QoE report.**  |
| CMCC | Share view with Samsung. |
| CATT | We agreed that QoE reference and Trace reference should be considered for correlation. So the configuration and report may include correlation ID between QoE and assisting radio-related measurement. If the option 3 in Q2 is used, The associated QoE measurement ID (RAN2 agree short RRC ID) is included in the MDT configuration for identifying the start/stop from defined QoE collection if UE assisted solution is adopted. **The QoE measurement ID in the MDT configuration sent to UE. So we cannot agree to change “**WA: NG-RAN should NOT include the Trace Reference and Trace Recording Session Reference in the QoE configuration sent to UE” **to agreed**Also the report of the Immediate MDT (for radio-related measurement) includes QoE reference in MDT report sent to TCE |
| Nokia | No option from issue 2 is intended supported.M-based configuration: MDT configuration must contain QMC Ref in order to enable the gNB to select same UEs for MDT and QMC. The QMC configuration must contain Trace Reference, enabling the gNB to include the Trace Ref together with QMC Ref in reports to the MCE.S-based configuration: The QMC configuration must contain Trace Reference, enabling the gNB to include the Trace Ref together with QMC Ref in reports to the MCE.Report to the TCE: No changeReport to the MCE: Add Trace Ref + TRSR to the QoE Report (on top of QMC Ref), in order to enable the MCE to look up the corresponding MDT measurements in the TCE. |

### 3.4.1 Summary of issue 4

The following seems agreeable, with some comments included needing further confirmation:

**In case of aligned MDT/QMC (s-based activation), OAM includes Trace Reference and Trace Recording Session Reference of the MDT configuration in the QMC configuration sent to NG-RAN.**

**In case of aligned MDT/QMC (m-based activation), OAM includes Trace Reference of the MDT configuration in the QMC configuration sent to NG-RAN.** (if the "m-based QMC m-based MDT" activation scenario is supported, see issue 6. Also one company believes that the OAM additionally includes the QoE reference of the QMC configuration in MDT configuration sent to NG-RAN in order to enable the gNB to select same UEs for MDT and QMC).

**(WA turned into agreement) In case of aligned MDT/QMC, NG-RAN includes Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE.**

**The gNB does NOT include QoE reference in MDT report sent to the TCE.**

**NG-RAN does NOT include the QoE reference in MDT configuration sent to UE.**

**(WA turned into agreement) NG-RAN does NOT include the Trace Reference and Trace Recording Session Reference of the MDT session in the QoE configuration sent to UE** (One company comments that this can't be agreed if option 3 in Q2 is adopted. Two companies highlight a mobility scenario where either the mapping relation between QoE reference and Trace ID is transferred over Xn, or sent to the UE.)

## 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. |
| Huawei | In our understanding, the indicator is used to inform the NG-RAN that the association between QoE and MDT is needed in MCE. Therefore the indicator should be “An indicator is required in the QoE configuration to NG-RAN to inform whether it should send some assistance information to the collection entity to assist the performing of the association”For the assentation information from the UE, we think UE can send the QoE start/stop indication to the NG-RAN. Then the NG-RAN can send the QoE start/stop indication to the MCE. The MCE can use the time of QoE start/stop to find the MDT results during the QoE measurement. |
| **Ericsson** | We agree with QC rewording. The first agreement is addressed in Issue 4.Regarding timestamps, we propose the following:* **Proposal: To enable time alignment between an already ongoing Immediate MDT and a QoE measurement started later, the start time and end time of the QoE measurement, in addition to the Trace Reference and Trace Recording Session ID, needs to be added to the QoE measurement report at the NG-RAN node.**
* **Proposal: In case of alignment between MDT and a paused QoE, UE reports the time elapsed between generating the QoE report and the time of reporting the QoE report i.e., when reporting is resumed.**
 |
| ZTE | Share the view with QC. As commented above, Trace id can be included in the QoE configuration as an implicit indicator. We are fine with the rewording.For the time alignment, we have the same understanding with QC. RAN can autonomously add the reception time of QoE and MDT reports to assist MCE with the alignment. There is no need for UE to send the start/stop time of sessions.  |
| Samsung | Agree with the E///’s two proposals. |
| CMCC | Agree with E. |
| CATT | Agree with E/// |
| Nokia | No indicator needed on top of the references proposed under issue 4. Ideally the UE should provide a timer indicating the reporting delay (buffering time) in case of overload. The gNB can use a common clock for time stamping of MDT Reports and QoE Reports. |

### 3.5.1 Summary of issue 5

**An indicator (TR/TRSR) is required in the QoE configuration to NG-RAN to inform whether it should forward the QoE report to MCE along with the MDT related trace details.**

**To enable time alignment between an already ongoing Immediate MDT and a QoE measurement started later, the start time and end time of the QoE measurement, in addition to the Trace Reference and Trace Recording Session ID, needs to be added to the QoE measurement report at the NG-RAN node.**

**NG-RAN can include session start and session end time stamp information related to MDT and QoE reports autonomously, using the same clock for MDT and QoE to assist the correlation entity.**

**FFS: In case of alignment between MDT and a paused QoE, UE reports the time elapsed between generating the QoE report and the time of reporting the QoE report i.e., when reporting is resumed.** (based on the comments, the moderator is not sure if this is agreeable at the present meeting)

## 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?  |
| Huawei | Considering the mobility of the UE, the MCE need one ID to find the MDT results and QoE results for the UE in all the NG-RAN. The m-based QoE/MDT are not configured for special UE. It is difficult to use one ID to find these results of this UE. Therefore the M-based QoE and m-based MDT can consider in the next release due to the time limit. |
| **Ericsson** | Agree |
| ZTE | Seems a bit too early to consider these scenarios in stage-2 spec. Let’s focus on the solution at this stage. |
| Samsung | Agree  |
| CMCC | Seems OK. |
| CATT | agree |
| Nokia | **S-based QoE and s-based MDT:** needed**M-based QoE and m-based MDT:** preference to support this in Rel-17**S-based QOE and m-based MDT:** don't see neither need nor feasibility |

### 3.6.1 Summary of issue 6

S-based QoE and s-based MDT: No companies against.

M-based QoE and m-based MDT: One (or two) companies comment that this may not be needed in Rel-17.

S-based QOE and m-based MDT: This activation scenario is not well understood by the moderator, or don't see neither need nor feasibility.

It is therefore proposed for agreement:

**Rel-17 NR QMC to support the following activation scenario: S-based QoE and s-based MDT.**

**Rel-17 NR QMC will not support the following activation scenarios: M-based QoE and m-based MDT, S-based QoE and m-based MDT.**

## 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. |
| Huawei | In general yes.  |
| **Ericsson** | Yes |
| ZTE | It can be discussed later, after the basic solution has been clear. |
| Samsung  | Yes |
| CMCC | In general yes. |
| CATT | Yes |
| Nokia | Will depend on triggering scenarios for RVQOE. In case of autonomous triggering in the gNB, the RAN node can also autonomously configure RRM measurements. If RVQOE is configured by OAM or application server, alignment can be achieved with same mechanism as normal QMC/MDT. |

### 3.7.1 Summary of issue 7

All companies seem aligned.

**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.**

## 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.

|  |  |
| --- | --- |
| Company | Comment |
| Ericsson | In issue 4, Moderator says that the following WA may be confirmed, but it is not proposed in this CB:"WA: NG-RAN should NOT include the Trace Reference and Trace Recording Session Reference in the QoE configuration sent to UE". |
| ZTE | We would like to have some discussion on the alignment split scenarios.In split architecture, gNB-CU-CP, gNB-CU-UP and gNB-DU can perform MDT measurement independently and report the measurement results to TCE. So, when we try to achieve MDT amd QoE alignment in split scenarios, the gNB-DU (F1AP impacted) and gNB-CU-UP (E1AP impacted) should be notified to send the corresponding MDT reports to MCE, for correlation with QoE reports.In our contribution, a new IE named QoE Assistance information over E1 and F1 is defined, to notify gNB-DU or gNB-CU-UP about the information needed for the alignment. The specific description of our proposal can be found in R3-215668. TP for E1/F1 is provided in R3-215669. If possible, hope we can discuss it in phase II. |
|  |  |

### 3.8.1 Summary of other issues

Moderator's reply to Ericsson: I have proposed confirmation of this WA in summary of issue 4, together with comments from some companies.

Moderator's reply to ZTE: I include request for comments on these TPs in round II.

# 4 Discussion - 2nd round

## 4.1 Comments on TP for TS 38.401

Please provide your comments to the TP for TS 38.401 "Alignment of MDT and QoE Measurements" submitted in 5668. For background, see discussion paper in 5667 and comment from ZTE in section 3.8 above.

|  |  |
| --- | --- |
| Company | Comment |
| Samsung | If the purpose is to transfer the MDT report to MCE server, other options can also be considered, e.g. by OAM implementation, TCE server can transfer MDT report to MCE server, or MCE server can request MDT report from TCE server, or the TCE server and MCE server can be configured the same IP Address. This way is more simple and no specification impact.At least we should check with SA5 whether there’s a need for NG-RAN to help transfer the MDT report to MCE server or it can be solved internally by implementation. |
| Qualcomm | OK to include baseline call flows for the non-split gNB cases once we have the agreements this meeting. But also OK to check with SA5 as Samsung pointed out.Split-gNB architecture needs more discussion. |
|  |  |

### 4.1.1 Summary

Split architecture needs more discussion, to be continued at next meeting.

## 4.2 Comments on TP for TS 38.463 and TS 38.473

Please provide your comments to the TP for TS 38.463 and TS 38.473 "(TP for E1/F1) Alignment of Radio-Related Measurement and QoE Measurements" submitted in 5669. For background, see discussion paper in 5667 and comment from ZTE in section 3.8 above.

|  |  |
| --- | --- |
| Company | Comment |
| Samsung | 4.2 can be discussed if 4.1 is agreed. |
| Qualcomm | In case of split gNB architecture, * DU and CU-UP may provide some MDT measurements to TCE
* CU-CP will still provide QoE report to MCE
* When MDT/QoE alignment is desired, MDT measurements can also be sent from DU/CU-UP to MCE which can then do the correlation work (based on the start/stop time stamp information added by the RAN entities autonomously)

The proposal in 5669 proposes to include some QoE assistance information (e.g., QoE Reference ID, QoE MCE IP Address, MDT Trace ID) from CU-CP to DU/CU-UP If the following is agreed, then even DU/CU-UP need not include QoE reference in MDT report sent to TCE and hence no assistance information over F1/E1 is needed. **The gNB does NOT include QoE reference in MDT report sent to the TCE.** |
|  |  |

### 4.2.1 Summary

Split architecture needs more discussion, to be continued at next meeting.

## 4.3 Other discussion on agreements

**UE assisted information may be needed for time alignment..**

**Qualcomm:** We can’t accept Samsung’s proposed changes. As per moderator’s summary, 4/8 companies don’t prefer UE assisted solution. Also, we have raised concerns on handling multiple QoE start/stop indication with multiple QMC configured, introducing a new “suspend” mechanism at RRC with Option 3 and the fact we have agreed that NG-RAN can include session start/stop information autonomously. Thereby we don’t think any UE assisted solution is needed. Pause scenario is also still FFS.

CATT: we agree with SS change because there still many companies support UE assist solution. The option 1 is an already existing solution. We should support, but the option 1 cannot fulfil the requirement we define in TR, “it is beneficial and efficient if measurement collection and reporting can start at the same time.” So we need introduce other solution to support it. Also some companies think the UE assist solution need to be supported.

Samsung2: reply to QC, then we suggest to remove the whole proposal, as there’s no consensus. And the fact is NG-RAN is not aware of the session start/stop of application layer, how it can add the time autonomously?

**FFS: NG-RAN does NOT include the QoE reference in MDT configuration sent to UE.**

**(WA turned into agreement) NG-RAN does NOT include the Trace Reference and Trace Recording Session Reference of the MDT session in the QoE configuration sent to UE** (One company comments that this can't be agreed if option 3 in Q2 is adopted. Two companies highlight a mobility scenario where either the mapping relation between QoE reference and Trace ID is transferred over Xn, or sent to the UE.)

**Qualcomm**: Regarding some companies’ comment that “*if the MDT is m-based MDT, the target gNB is not aware of the trace id of the source gNB, so the mapping relation between the QoE reference and trace ID of the source gNB should be transferred from source gNB and target gNB*”. This is beingdiscussed as part of CB#QoE4 where MDT Alignment Info is being proposed for both s-based and m-based QoE. Don’t think this has any UE impact and we should be OK to accept the proposal as it is.

Samsung2: it’s also applied to the scenario of m-based MDT and m-based QoE. So this proposal should be FFS.

**FFS: In case of alignment between MDT and a paused QoE, UE reports the time elapsed between generating the QoE report and the time of reporting the QoE report i.e., when reporting is resumed.** (based on the received comments, the moderator is not sure if this is agreeable at the present meeting)

**Qualcomm**: We should keep this as FFS. RAN2 is still discussing where the paused QoE reports are buffered (at UE APP or UE AS). Also, NG-RAN can compute the pause duration by the timing difference of sending pause and resume command.

Samsung2: NG-RAN cannot know the generation time of the QoE report, the understanding of QC is not correct. The pause duration for one QoE report is the timing difference of generating report and sending report, namely, different QoE reports have different pause durations.

**Rel-17 NR QMC to support the following activation scenario: S-based QoE and s-based MDT, M-based QoE and m-based MDT.**

**FFS on S-based QoE and m-based MDT.**

# 5 Conclusion, Recommendations [if needed]

If needed

# 6 References

|  |  |  |
| --- | --- | --- |
| [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 |