3GPP TSG-RAN WG3 #115e R3-22xxxx

21st Feb – 3rd Mar 2022

Agenda Item: 15.2.2

Source: Huawei (moderator)

Title: Summary of Offline Discussion on CB: # QoE4\_Mobility

Document for: Approval

# Introduction

**CB: # QoE4\_Mobility**

**- Whether/how to transport the s-based QoE configuration container during HO.**

**- Discussion on the code points of the Measurement Status IE and whether/how to transport it during HO.**

**- Whether to re-configure the s-based QoE to UE when it moves back to area scope.**

**- How to include QMC Activation IE in HO messages.**

**- Whether/how to transport Measurement Type IE during HO.**

**- Whether/how to support QMC/MDT alignment for m-based MDT.**

**- Capture agreements and Provide TPs if agreeable.**

**(HW - moderator)**

Summary of offline disc

# For the Chairman’s Notes

**For chairlady to copy:**

* **S-based XML file (configuration container) is included in source to target transparent container;**
* **S-based XML file (configuration container) is included as an explicit IE in XnAP RETRIEVE UE CONTEXT RESPONSE and XnAP HANDOVER REQUEST message.**
* **S-based XML file is included as explicit IE in NG AP messages only for initial configuration purpose.**
* **Both S-based and M-based XML file could be included in RRC text container, and M-based XML file will ONLY be included in RRC text container, during mobility process**
* **m-based MDT inside the MDT Alignment Information is not applicable at Xn- and NG-based handover, i.e. it only applies for initial configuration over NGAP.**
* **There is no need to introduce an explicit IE like “measurement type” to indicate m-based QoE measurement or s-based QoE measurement**
* **An explicit NGAP/XnAP “measurement status” IE is introduced, the code point is “ongoing”**
* **RAN3 sees no need to indicate the pause/resume status during mobility, the final decision is up to RAN2.**
* **In the NGAP and XnAP QoE IE, the presence of Area Scope IE should be O, and maxnoofUEAppLayerMeas should be = 16**

**R3-221678 is revised in R3-222624**

Detailed discussions

First round

**Handling of QoE configurations**

* Whether to turning the WA of the propagation of the s-based QoE configuration container into agreement

8 companies participated the discussion, all the companies shared the same view that this WA should be turned into formal agreement.

**Turn the following WA into agreement: WA: for s-based QoE, the s-based QoE configuration container (XML file) is included in XnAP HANDOVER REQUEST and RETRIEVE UE CONTEXT RESPONSE messages**

* The presence of s-based QoE configuration container (XML file) in Xn if the source RAN receives the s-based QoE configuration from CN: mandatory, optional or conditional

8 companies participated the discussion, 4 companies preferred as M, two companies preferred O, two companies suggested to be conditional, but as per moderator’s observation, all the companies seem to share the same view that for S-based QMC, this IE shall be present, as a compromise, moderator suggested to take the following compromise as agreement:

If the source RAN receives the s-based QoE configuration from CN, the s-based QoE configuration container (XML file) shall be present over Xn during HO process

* Whether to include s-based configuration container as explicit IE in NGAP HANDOVER REQUIRED message

8 companies participated the discussion, 4 companies thought there is no need, one company asked for more clarification, 3 companies preferred to include. The main point here is, whether CN is able to store the received s-based configuration, if yes, there is no need for RAN to send such configuration back to CN; if no, source RAN node needs to include s-based configuration then. Taking LTE approach into account, and considering the fact this is the last meeting, moderator would suggest to go for the majority (though not overwhelming majority):

There is no need to include s-based configuration container as explicit IE in NGAP HANDOVER REQUIRED message

**Support the alignment of S-based QoE measurement and M-based MDT during mobility**

* Whether to support to include m-based MDT inside the *MDT Alignment Information* for Xn- and NG-based handover

8 companies participated the discussion, 7 companies shared similar view that to include m-based MDT inside the *MDT Alignment Information* is applicable to initial configuration over NG AP, there is no need to support to include m-based MDT inside the MDT Alignment Information for Xn- and NG-based handover; 1 companies preferred to support, since if target gNB may have available m-based MDT, alignment of m-based MDT and s-based QMC could still be supported. Moderator would suggest to take the majority view as agreement:

m-based MDT inside the MDT Alignment Information is not applicable at Xn- and NG-based handover, i.e. it only applies for initial configuration over NGAP.

**Measurement type and measurement status indication during mobility**

* Whether to introduce an explicit IE like “measurement type” to indicate m-based QoE measurement or s-based QoE measurement

8 companies participated the discussion, 4 companies preferred no, 1 company also preferred no as long as s-based XML file is mandatory to be present, 3 companies preferred yes. Here the main issue is, if target node could recognize the measurement type according to the received info. 5 companies seem to think that since s-based XML file is present and m-based is not, target side is able to implicitly know the type, the others seem to think that XML file might not be always present and an explicit indication is straight forward. Again, considering the fact this is the last meeting, moderator would suggest to go for the majority (though not overwhelming majority):

There is no need to introduce an explicit IE like “measurement type” to indicate m-based QoE measurement or s-based QoE measurement

* Whether to introduce an explicit IE like “measurement status” to indicate the status.

8 companies participated the discussion, 7 companies shared similar view to introduce this IE, one company is negative, moderator would suggest to go for the majority; for the concrete coding, “started” or “ongoing” seems to be favored by the majority.

Agree to introduce an explicit IE “measurement status”, the code point is “ongoing”

**Others**

* Whether to indicate the pause/resume status during mobility

8 companies participated the discussion, all the company shared similar view that there is no need to indicate the pause/resume status during mobility, and RAN3 has agreed to request RAN2 to include pause status information for reporting in RRC container (Source to Target Transparent Container). There is no RAN3 impact, and this could be handled by RAN2.

RAN3 sees no need to indicate the pause/resume status during mobility, the final decision is up to RAN2.

* Whether to introduce RVQoE Report Transfer message over XnAP

Since this was discussed in another CB, moderator suggested we leave the conclusion to be made in CB#5.

* Whether to turning the WA of including the RVQoE metrics configured at the UE into agreement

Similarly this topic was also discussed in CB#05, anyway among the 7 companies who participated the discussion, we see the provided comments were converged. Let’s see the conclusion from CB#5.

* Whether to replace “Trace Reference” to “Any available MDT” in CHOICE MDT Alignment Information IE.

Similarly, let’s see the discussion and conclusion in CB#6.

* How to handle in case UE moves out of area scope

7 companies participated the discussion, 5 companies shared similar view that there is no need for RAN3 to discuss, since RAN2 is discussing this issue, question was also raised that what if the target doesn’t support QoE measurement. 2 companies think RAN3 needs to discuss the scenario, and agreed that when UE moves out of area scope, s-based QoE configuration may be released by network, and when UE moves back within area scope, s-based QoE configuration shall be re-activated. Moderator suggested to go for majority that leave this issue for RAN2 to discuss and decide.

RAN2 to discuss how to handle the case where UE moves out of area scope

**Miscellaneous**

* Cleanups

For the cleanups, it is reasonable that Area Scope IE should be O, and maxnoofUEAppLayerMeas should be = 16. Pending…

Agree that Area Scope IE should be O, and maxnoofUEAppLayerMeas should be = 16

Second round

During second round discussion, companies mainly focus on the handling of XML files during mobility process. The main open point is how to avoid redundancy, since both S-based and M-based configurations which contains XML file, are included in RRC text, and XML file is also included in source to target transparent container, there will be redundancy. In order to be simple, the majority finally agreed the following:

* **S-based XML file (configuration container) is included in source to target transparent container;**
* **S-based XML file (configuration container) is included as an explicit IE in XnAP RETRIEVE UE CONTEXT RESPONSE and XnAP HANDOVER REQUEST message.**
* **S-based XML file is included as explicit IE in NG AP messages only for initial configuration purpose.**
* **Both S-based and M-based XML file could be included in RRC text container, and M-based XML file will ONLY be included in RRC text container, during mobility process**

With this, redundancy is avoided, and the target side could deduce whether the received QoE configuration is an S-based or M-based, according to the presence of XML file, since M-based is only included in RRC context.

Companies also tried to update the rest of the proposals into follows, in which the out of area scope handling was removed, since it is mainly up to RAN2 to decide; some further updates were agreed to make proposal more precise.

* **m-based MDT inside the MDT Alignment Information is not applicable at Xn- and NG-based handover, i.e. it only applies for initial configuration over NGAP.**
* **There is no need to introduce an explicit IE like “measurement type” to indicate m-based QoE measurement or s-based QoE measurement**
* **An explicit NGAP/XnAP “measurement status” IE is introduced, the code point is “ongoing”**
* **RAN3 sees no need to indicate the pause/resume status during mobility, the final decision is up to RAN2.**
* **In the NGAP and XnAP QoE IE, the presence of Area Scope IE should be O, and maxnoofUEAppLayerMeas should be = 16**

Companies were also discussed the naming alignment, but seems the majority would like to keep the current naming and definition.

# Discussion

Similar as what we did for previous meeting, the discussion will try to discuss the further details on the remaining open issues on support of QoE measurement for intra-system mobility, including further details on the transferring of QoE configuration during HO, support QMC/MDT alignment for m-based MDT, measurement type and measurement status transferring, etc. The discussion will take the papers from [1] to [10] into account.

Please note that, for other topics for which dedicated CBs were allocated, e.g. RAN QoE visibility, it might be also involved in mobility support, and NG/Xn impacts might be expected, moderator would leave discussions there.

Moderator’s note: Before stepping into details discussions, moderator would remind that some agreements and WA were already reached during the previous meetings, see below. However, there are some proposals in this meeting trying to revert some of them. We may need to reach some consensus whether this a need to reopen the discussion.

WA: for s-based QoE, the s-based QoE configuration container (XML file) is included in XnAP HANDOVER REQUEST and RETRIEVE UE CONTEXT RESPONSE messages

In case of s-based QMC, the configuration container (XML file) is included as an explicit IE in the NGAP HANDOVER REQUEST.

The QMC Activation IE is placed into the Source to Target Transparent Container IE within the HANDOVER REQUIRED message (rather than sent as an explicit IE).

FFS on the presence of s-based configuration container in NGAP HANDOVER REQUIRED message.

Check RAN2 progress, to be continued...

During handover preparation, source NG-RAN node sends to the target NG-RAN node:

- in XnAP/NGAP IEs: available RVQoE metrics (received as part of QMC configuration);

- (WA) in RRC container: RVQoE metrics configured at the UE

## Handling of QoE configurations

### Whether to turning the WA of the propagation of the s-based QoE configuration container into agreement

A WA was reached as follows, companies are invited to provide views whether to turn this WA into agreement.

WA: for s-based QoE, the s-based QoE configuration container (XML file) is included in XnAP HANDOVER REQUEST and RETRIEVE UE CONTEXT RESPONSE messages

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | Yes | In our understanding, the source node sends all the s-based QoE configuration (XML) to the target node regardless whether the source node has configured the QoE configuration to the UE. Then the target node can know the QoE measurement type and which s-based qoe has been configured by the source node. Also the target node can directly reconfigure one s-based QoE measurement if the source node has released this s-based qoe measurement due to some other reasons(e.g. the overload or the area scope) |
| Qualcomm | Yes | The container should be propagated. Presence of this container can be discussed in next question. |
| ZTE | Yes | Till now, we still believe that the burden caused by passing the QoE configuration container during handover is much larger than the benefit NW can get. To complete the NR QoE project in time, we are fine to do some compromise. |
| **Ericsson** | **Yes** |  |
| CATT | Yes |  |
| China Unicom | Yes | It is beneficial to propagate the s-based QoE configuration container in Xn for those UEs not configured yet. |
| Samsung | Yes |  |
| Nokia | Yes | Agree with China Unicom |
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### The presence of s-based QoE configuration container (XML file) in Xn if the source RAN receives the s-based QoE configuration from CN: mandatory, optional or conditional

Moderator’s Note: if yes to 3.1.1, please companies continue to share your view on the presence of container.

|  |  |  |
| --- | --- | --- |
| Company | M, O or conditional | Comment |
| Huawei | M | Same to the above comments, the source node sends all the s-based QoE configuration(XML) to the target node regardless whether the source node has configured the QoE configuration to the UE or not, then the configuration container should be mandatory. |
| Qualcomm | Prefer M  OK with conditional too | We slightly prefer the presence to be mandatory over conditional because:   1. There is no need to include a *QoE Measurement Type* IE. 2. There is no need to define codepoints = {configured, not-configured} for *QoE Measurement Status* IE |
| ZTE | M | Same view with QCM.  Passing the container mandatory is workable and let the signalling design much easier and straight forward. |
| **Ericsson** | **O**, of course | How can the presence of s-based XML file be M? How can we pass an s-based XML file in case of m-QoE?  The correct formulation is “**For s-based, the XML file is always passed**”. |
| CATT | M | Considering the scenarios below:  Step 1: AMF configures s-based QoE to NG-RAN1 for UE.  Step 2: UE handover from NG-RAN1 to NG-RAN2. Because NG-RAN2 is out of area scope, QoE release is triggered.  Step 3: UE handover from NG-RAN2 to NG-RAN3. NG-RAN3 is within the area scope, QoE shall be activated again.  When UE moves out of area scope, s-based QoE configuration may be released by network. When UE moves back within area scope, s-based QoE configuration shall be re-activated |
| China Unicom | Conditional | It will bring redundant propagation in Xn if set the presence to be mandatory because the UE could have already configured. |
| Samsung | See comment | The XML container IE in QMC Activation is optional, but it’s mandatory for s-based QMC.  The formulation from E/// is fine. |
| Nokia | Optional | Only transferred in case of s-based QMC that has not already been configured to the UE. Always transferring all XML files will negatively impact node performance (big container size, and potentially many QMC sessions configured). |
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### Whether to include s-based configuration container as explicit IE in NGAP HANDOVER REQUIRED message

Moderator’s note: this corresponds to the remaining FFS from last meeting.

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | No | The CN knows which signalling based QoE configuration has been sent to the source NG-RAN, similar as in the LTE QMC. The source NG-RAN does not need to send the signalling based QoE configurations back to the CN. |
| Qualcomm | Yes | s-based configuration container needs to be included in NGAP HANDOVER REQUIRED so that AMF can propagate it further to the target node over NGAP HANDOVER REQUEST.  We don’t think the AMF will store the s-based QoE configurations and can include QoE configurations in NGAP HANDOVER REQUEST to the target node on its own. |
| ZTE | May need clarification. | In previous RAN3 meeting, companies were agreed to move QMC Activation IE into the Source to Target Transparent Container IE within the HO REQURIED message. The s-based QoE configuration container can also be found in the transparent container. Though the AMF can not read the info in the transparent container, the target node can directly receive the s-based QoE configuration container from source node.  We wonder when we discuss this question, whether the s-based QoE configuration container in QMC Activation IE shall be taken into account from usability perspective.  In addition, the s-based QoE config container and the QMC Activation IE are explicitly contained in the NGAP HO REQUEST message. Namely, the s-based QoE configuration may be duplicated taken in the NGAP HO REQUEST message. We think companies may need clarification on this part. |
| **Ericsson** | In *QMC Activation* IE, which is inside the source to target container | * We should **align the** *QMC Activation* IE design for **XnAP and NGAP**. * AMF should not be obliged to store the s-based XML file. What use can AMF have of the XML file? * In NG HO, for s-based QoE, the **s-based XML file should be sent from the source all the way to target inside the *QMC Activation* IE, which is inside the source to target container.** * If we put the QMC Activation IE inside the source to target container, how will the AMF know whether to pass the s-based XML file to the target? What if the measurement ended while UE was connected to the source? * So, the agreement saying that it is an explicit IE inside NGAP HANDOVER REQUEST should be **reverted.** |
| CATT | No | In our understanding, s-based QMC can take the same solution as TRACE which is saved by AMF, i.e. s-based trace is not included in NGAP HANDOVER REQUIRED message. So, we propose to not include s-based QoE configuration in the NGAP HANDOVER REQUIRED. |
| China Unicom | Yes | s-based QoE configuration can be placed in Source to Target Transparent Container IE within the HANDOVER REQUIRED message. Then AMF can directly forward it to target node in NGAP HANDOVER REQUEST, and AMF does not have to always store all the s-based QoE configuration in case of handover.  We agree that “the agreement saying that it is an explicit IE inside NGAP HANDOVER REQUEST should be **reverted”** |
| Samsung | No | Similar view as HW and CATT, LTE QMC is a good reference, if we refer to the TS 28.405, it clearly states that the CN will store the QMC configuration.  “The MME receives and stores QoE measurement collection job as part of Update Location Answer (or Insert Subscriber Information). Then the same procedure for activation of measurement collection job is applied as after UE is attached, described in see 4.4.2.2. ”  Besides, we can learn from MDT, MDT configuration is not included in Handover required message, the CN will include the MDT configuration as an explicit IE in NG handover request message, not in the source to target container, which means CN stores the MDT configuration, but there is no corresponding SA spec description in that AMF stores MDT configuration, which means there’s no CN behavior description doesn’t mean CN will not store the MDT configuration.  And we believe the SA5 will specify and update the NR QoE mechanism in the same way as LTE QMC in TS 28.405. |
| Nokia | No | After further thinking we should try to limit the impact on the CN due to NG HO as far as possible, and hence use the source-to-target container for any s-based QMC configuration that has not already been configured to the UE. The LTE solution doesn't seem optimal with respect to CN impact. |
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## Support the alignment of S-based QoE measurement and M-based MDT during mobility

Moderator’s Note: This might be also treated in another topic, if companies make comments here, please make sure the comments are consistent. ☺

### **m-based MDT inside the *MDT Alignment Information* is not applicable at Xn- and NG-based handover**

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| --- | --- | --- |
| Company | Yes, applicable/No, not applicable | Comment |
| Huawei | No | We think this is only applicable for the case of initial configuration over NGAP. |
| Qualcomm | Not applicable | Same view as Huawei |
| ZTE | No | Same view with HW. |
| **Ericsson** | Applies **only for initial config** | By the way, I think that Hua & Co mean ‘yes’ – check the question formulation |
| CATT | Not applicable |  |
| China Unicom | Not applicable | Same view as Huawei |
| Samsung | Yes | What if the “any MDT available” is included? It is possible that current serving gNB have no available m-based MDT, but the target gNB may have available m-based MDT. |
| Nokia | Not applicable | Because this can't be applicable for handover, why configure alignment with m-based MDT at all? Do we want to specifically address case of stationary UEs? The alignment decision is taken by the OAM, but does the OAM know that the UE is stationary? |

## Measurement type and measurement status indication during mobility

### Whether to introduce an explicit IE like “measurement type” to indicate m-based QoE measurement or s-based QoE measurement.

Moderator’s note: if yes, please also indicate that in which messages this IE should be included (HO required/HO request/UE retrieval etc.), with the presence as M or O.

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | No | As commented in 3.1, we think the source node will send all the s-based QoE measurement to the target node, then the target node can know the measurement type based on the information in Xn and the RRC container |
| Qualcomm | Only if presence of container is not mandatory | This IE will be needed only if presence of the s-based container (XML file) is not mandatory in section 3.1.2 |
| ZTE | No | We share the same view with HW. The target node can easily distinguish the QoE measurement type by checking the receiving info. No new IE is needed. |
| **Ericsson** | This could work as well | Once again – the presence of XML cannot be mandatory, since this is only for s-QoE.  If agreed, it should go into all the messages where QMC Activation IE is present. |
| CATT | No | Measurement type can be indicated implicitly. |
| China Unicom | Yes | It is necessary to include “Measurement Type IE” as an explicit IE to clearly and intuitively indicate the type of the QoE measurement in case of the overriding scenario during mobility.  The Measurement Type IE should be included in the NGAP HANDOVER REQUIRED, NGAP HANDOVER REQUEST, XnAP HANDOVER REQUEST and RETRIEVE UE CONTEXT RESPONSE messages. |
| Samsung | No |  |
| Nokia | Yes | The XML container should not be always present for s-based QMC, so 'measurement type' seems useful. We propose to include it in the XnAP *QMC Information List* IE, and this IE should also be transferred in the NGAP source-to-target container in case of NG HO (see our discussion in R3-222386). |
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### Whether to introduce an explicit IE like “measurement status” to indicate the status.

Moderator’s note: if the answer is yes, please indicate your preferred definition, for example, what the code point looks like, “configured”, “not configured”, “ongoing”, etc., in which messages (HO required/HO request/UE retrieval etc.), M or O.

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | Yes, but only “ongoing” or “started, ended”.  For the NG, it is included in the source to target container.  For the Xn, it is included in the *UE Application Layer Measurement Informatio*n IE in the handover request and UE retrieval response message.  This IE is optional | As commented in 3.1.2, we think the source node will send all the s-based QoE measurement to the target node, then the target node can know the measurement type and which S-based QoE configured has been configured by the source node based on the information in Xn and the RRC container |
| Qualcomm | Yes | The codepoints should be:  {started, ended} if presence of container is mandatory  {started, ended, configured, not-configured} if presence of container is conditional |
| ZTE | Yes for “ongoing” | If the s-based QoE configuration container shall be sent to target node mandatorily, we think it is reasonable to forward an IE which means the QoE session is running from source node to target node. The code point can be either “start” or “ongoing”.  For the code point “ended”, i think we need some clarification on this one. Based on my understanding, if a QoE session is ended, all configuration of this QoE can be released. No need for this code point. |
| **Ericsson** | Yes, with “ongoing” or “started” being the only codepoint. This already exists in XnAP BL CR, **we should include it in the NGAP BL CR.** | Why should “ended” be a codepoint? |
| CATT | Yes for ongoing |  |
| China Unicom | Yes | The codepoints{started, ended} would be needed. The target node can check the RRCReconfiguration IE whether this UE was configured or not, so the codepoints of configured and not-configured are not needed. |
| Samsung | Yes with {started, ended} |  |
| Nokia | not needed | We believe that the needed information will be sent to the target node in RRC message. |
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## Others

### Whether to indicate the pause/resume status during mobility?

Moderator’s note: if the answer is yes, please companies also indicate your suggested solutions and stage 3 details, e.g. in which message(s).

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | No | In previous meetings, RAN3 has agreed to request RAN2 to include pause status information for reporting in RRC container (Source to Target Transparent Container). There is no RAN3 impact. |
| Qualcomm |  | Same view as Huawei |
| ZTE | No | Same view with HW. |
| **Ericsson** | **Discussed in R2 now** |  |
| CATT | No | RAN2 have decided to introduce QoE Measurement Status related information in RAN2 container.  MeasConfigAppLayer-r17 ::= SEQUENCE {  measConfigAppLayerId-r17 MeasConfigAppLayerId-r17,  measConfigAppLayerContainer-r17 OCTET STRING OPTIONAL, -- Need S  serviceType-r17 ENUMERATED {streaming, mtsi, vr, spare5, spare4, spare3, spare2, spare1} OPTIONAL, -- Need S  pauseReporting BOOLEAN,  ...  *measConfigAppLayerId* IE in *AppLayerMeasConfig* IE is to indicate QoE configuration which has been sent to UE. The *pauseReporting* IE in *AppLayerMeasConfig* IE is used to indicate whether UE is paused or not.  AppLayerMeasConfig IE is in RRCReconfiguration which will be sent to target node in RAN2 container.  So, it is not needed for RAN3 to introduce an explicit IE like measurement status. |
| China Unicom | No | Same view as Huawei |
| Samsung | No | According to the RAN2 status provided by CATT |
| Nokia | no RAN3 spec impact | Handled by RAN2 |
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### How to handle the pause/resume QoE reporting by the UE during mobility?

Moderator’s note: if the answer is yes, please companies also indicate your suggested solutions.

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei |  | It is RAN2 to decide |
| Qualcomm |  | Target node can know whether a QoE configuration is paused or not via inter-node signaling support of pause status by RAN2. There is no need to enhance QoE Measurement Status to include pause/resume status. |
| ZTE |  | This shall be discussed in RAN2. |
| **Ericsson** | **See comment** | We think that, when a UE with paused QoE configuration connects in a new cell (as a result of handover or RRC resume), unless the new gNB releases the QoE configuration, the UE should send any pending QoE reports to the new gNB when/if the new gNB resumes QoE reporting in the UE. |
| China Unicom |  | It is RAN2 to decide. |
| Samsung |  | This should be discussed in RAN2 |
| Nokia |  | Up to RAN2 |
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### Whether to introduce RVQoE Report Transfer message over XnAP

Moderator’s note: if the answer is yes, please companies also further indicate suggested solutions and stage 3 details, e.g. in which message(s). Similarly, if this was also discussed in another CB, please keep consistent if comments are provided.

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comment |
| Huawei |  | RAN2 are discussing whether the UE will retransmit the QoE reporting container in the target node during handover. For the RAN visible QoE, we think RAN3 can wait the progress of RAN2 |
| Qualcomm | Discuss in CB#QoE5 |  |
| ZTE |  | This shall be discussed in CB:#QoE5. |
| **Ericsson** | **Yes** | We can discuss in the RVQoE CB. |
| China Unicom | Discuss in CB#QoE5 |  |
| Samsung | Yes | RAN2 already agreed to retransmit the QoE reporting container to the target node. |
| Nokia | No | This is not part of our Rel-17 tasks decided by RAN plenary, and not handled by the study item. |
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### Whether to turning the WA of including the RVQoE metrics configured at the UE into agreement

A WA was reached as follows, companies are invited to provide views whether to turn this WA into agreement.

During handover preparation, source NG-RAN node sends to the target NG-RAN node:

- in XnAP/NGAP IEs: available RVQoE metrics (received as part of QMC configuration);

- (WA) in RRC container: RVQoE metrics configured at the UE

Similarly, if this was also discussed in another CB, please keep consistent if comments are provided.

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comment |
| Huawei | Yes | The source RAN will send all the RRC configuration of the UE in the RRC container to the target node. The RRC configuration of the UE includes the RVQoE metrics configured at the UE. It does not have impact on RAN3. |
| Qualcomm | Yes | Same view as Huawei. Also being discussed in CB#QoE5 |
| ZTE |  | This topic shall be discussed in CB#QoE5. |
| **Ericsson** | **Yes, turn the WA into an agreement** | We should turn this WA into an agreement, R2 should implement this. |
| China Unicom | Discuss in CB#QoE5 |  |
| Samsung | Yes |  |
| Nokia |  | Available RVQoE metrics (received as part of QMC configuration) should be transferred in RAN3-defined IE. But we expect that the current RVQOE configuration is transferred in RRC container. |
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### Whether to replace “Trace Reference” to “Any available MDT” in CHOICE MDT Alignment Information IE.

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | See comments | We think the motivation is to perform the alignment between the M-based MDT and s-based QoE. We can wait the progress on the alignment. |
| Qualcomm | No | We can stick to Trace ID based MDT-QoE alignment in Rel-17 instead of opportunistically using any available MDT. |
| ZTE |  | This shall be discussed in CB#QoE6. |
| **Ericsson** | **Alignment CB** |  |
| China Unicom |  | discussed in CB#QoE6. |
| Samsung |  | Let’s discuss it in CB#6 |
| Nokia | No | No real need to support alignment with m-based MDT at all. |
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### How to handle in case UE moves out of area scope

In [6], it was proposed that:

* when UE moves out of area scope, s-based QoE configuration may be released by network;
* when UE moves back within area scope, s-based QoE configuration shall be re-activated.

In order to achieve this, s-based QoE configuration including container shall be propagated and stored by target NG-RAN even if UE QoE configuration has been released.

Moderator’s note: companies are invited to provide understanding on above proposals, whether to agree or not, including the potential foreseen spec impacts if sharing similar view.

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Huawei | Yes | We think the spec impacts is : The source node will send all the s-based QoE configuration to the target node |
| Qualcomm | No | Handling QoE configurations when UE moves outside area scope and ongoing session handling is being discussed in RAN2. No need for RAN3 to discuss this and we don’t for see any new RAN3 impacts. |
| ZTE | No | Share the same view with QCM.  This part is discussing in ongoing RAN2 meeting. No need to double discussed in RAN3. |
| **Ericsson** | **No** | How will the target know that it should save the XML file if it does not support QoE? |
| China Unicom | Yes | It can support more potential scenarios. If the UE moves to non-supporting node, the target NG-RAN can release the QoE measurement. |
| Samsung | No | Similar view as QC |
| Nokia | No | Question being handled in RAN2, no need to have this discussion in RAN3 now. |
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## Miscellaneous

Moderator’s note: companies are invited to add further issues if any.

### Issue 1:

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| --- | --- |
| Company | Comment |
| **Ericsson** | Some cleanups:   * In NGAP *QMC Activation* IE, the presence of *Area Scope* IE should be O. * maxnoofUEAppLayerMeas should be = 16 * The *RAN Visible QoE Metrics Support* IE needs to be added to the NGAP HANDOVER REQUEST as a top-level IE, and also to the XnAP *QMC Information* IE. NOTE: this IE indicates available RVQoE metrics, not the configured ones. |
| Huawei | Yes to first two bullets, no to the third one.  For the third one, we think there is no need, for RAN visible QoE metrics, RAN3 agreed to introduce the configuration, RAN3 and RAN2 will also discuss whether and how to provide RAN visible QoE report to target side, if target doesn’t support, just discard the report, there is no need to indicate such info. In addition, we think the current design in BL CR is clear enough, not sure if there is anything broken. |
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### Issue 2: Aligned Xn and NG HO (Nokia R3-222386)

Several QMC-related indicators and IEs are discussed for handover, and duplication of these in both XnAP and NGAP will create redundant specification without any added value, just creating unnecessary CN impact e.g. in case of future corrections or enhancements. It is therefore proposed in R3-222386:

**Proposal: Include the *QMC Information List* IE as an XnAP encoded container within the NGAP *Source to Target Transparent Container* IE**

Do you agree with this proposal?

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Nokia | Yes | See above |
| Huawei | No | We understand the intention, but we think the parameters over NG and Xn may not be exactly the same, so such design seems simple but also introduce dependency which removes flexibility. |
|  |  |  |

# Conclusion, Recommendations [if needed]

If needed

# References

1. R3-221678, (TP for QoE BL CR for TS 38.423) Mobility Support for NR QoE Measurement Collection (Ericsson) other
2. R3-221752, Open issues regarding QMC and reporting continuity in mobility scenarios (Qualcomm Incorporated) discussion
3. R3-221863, (TP for BL CR to TS 38.423) Handling of m-based MDT in case of mobility (Nokia, Nokia Shanghai Bell) other
4. R3-221931, Further discussion on Mobility of QoE measurement (China Unicom) discussion
5. R3-222178, Discussion on remaining issues in NR QoE mobility (ZTE Corporation) discussion
6. R3-222207, Discussion on Measurement Collection and Continuity in Intra-System Intra-RAT Mobility (CATT) discussion
7. R3-222224, Further discussions on mobility support of QoE measurement (Huawei) discussion
8. R3-222279, (TP for BL CR to TS 38.423) Mobility support of NR QoE (Samsung) other
9. R3-222386, Transfer of QMC information during handover (Nokia, Nokia Shanghai Bell) discussion
10. R3-222223, TP to 38.413 on configuration details (Huawei) other