3GPP TSG-RAN WG3 #114bis-e R3-21xxxx

17-26 Jan 2022

Agenda Item: 15.2.1.2

Source: Huawei (moderator)

Title: Summary of Offline Discussion on CB: # QoE3\_Configuration\_Report

Document for: Approval

# Introduction

**CB: # QoE3\_Configuration\_Report**

**- Check LS from SA5, reply if needed**

**- Check the configurations details**

**- Remaining issues on per-slice QoE**

**- Capture agreements and provide TPs if agreeable**

(HW - moderator)

Summary of offline disc

# For the Chairman’s Notes

**For chairlady to copy:**

Detailed discussions

# Discussion

Similar as what we did for previous meeting, the discussion will try to discuss the further details on the configuration details, including per-slice QoE measurement related, capability indication over NG and further miscellaneous details like naming, possible outgoing LSes etc. The discussion will take the papers from [1] to [12] into account.

Please note that, for other topics for which dedicated CBs were allocated, i.e. RAN QoE visibility and alignment of Radio-Related Measurement and QoE Measurements, they might also impact NG and may overlapped a bit with the discussions here, moderator would leave discussions there.

## Slice related issues

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.

Include slice info as explicit IE in the configuration message over NG

Slice scope is a list of S-NSSAI

To include slice scope outside the configuration container over NG

RAN3 assumes that slice ID is included inside the transparent QoE reporting container, which is up to SA4’s decision. Send an LS to SA4 with the RAN3 assumption and asking SA4 to revert back once there is specification support for the same.

There is no need to include slice ID as an explicit IE over Uu outside the QoE configuration and reporting container for legacy QoE. FFS whether and how to support per slice RVQoE configuration and reporting.

### Any ambiguities on the agreements on slice reached before

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Qualcomm | No |  |
| Huawei | No |  |
| Nokia | Yes | " asking SA4 to revert back" -> "asking SA4 to report back" (or "ask SA4 to inform RAN3…)"FFS whether and how to support per slice RVQoE configuration and reporting." - the "how" may have Uu impact, in which case the final decision will be taken by RAN2 |
| **Ericsson** | No |  |
| Samsung  | No |  |
| China Unicom | No |  |

### Whether slice ID should be included as an explicit IE over Uu for RAN visible QoE metric configuration and reporting

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comment |
| Qualcomm | No | S-NSSAI should **not** be included over Uu in the RVQoE configuration.S-NSSAI should **not** be included over Uu in the RVQoE report.(we feel it might be better to include PDU session ID in the RVQoE report instead of S-NSSAI as a single slice can be mapped to multiple PDU sessions and indicating PDU session ID can enable more fine-grained optimizations at the NG-RAN) |
| Huawei | No | We think the slice ID is not useful for the RAN visible QoE because different PDU session may have the same slice ID. |
| Nokia | No |  |
| **Ericsson** | Yes, in RVQoE reports | We do not understand the reasoning from the previous respondents – are you saying that slice-based optimization is useless? So why did we then introduce slice-based filtering of QoE measurements?We should liaise RAN2 to include the S-NSSAI used in the session in RVQoE report. |
| Samsung | Yes, in RVQoE report | We think the purpose of the per-slice RVQoE is for slice related optimization instead of PDU session optimization, e.g. whether the resources allocated for the slice is appropriate for ensuring the user experience on that slice, so it seems more straightforward to include the S-NSSAI over Uu in RVQoE report. Regarding PDU session ID, as we know that the slice ID associated with the PDU session may change, so using PDU session is not a good choice for per-slice RVQoE collection.Also agree with E///, we should liaise RAN2 about this. |
| China Unicom | Yes | PDU session should be mandatory in the QoE report, but S-NSSAI also can be included in the report for the gNB continence. |

## RAN Visible QoE measurement configuration over NG

### Remove the FFS corresponding to “RVQoE Metric Indication” in the TP to the BL CR of TS 38.413

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Qualcomm | Yes |  |
| Huawei | Yes | RAN3 has agreed that the OAM will inform the RAN of the RAN visible QoE metrics |
| Nokia | Yes |  |
| **Ericsson** | Yes |  |
| Samsung  | Yes |  |
| China Unicom | Yes |  |

## Prioritization mechanism

### Whether to introduce prioritization mechanism of different service types or slices for the UE to send pending QoE reports after RAN overload is solved.

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Qualcomm | No | No need of any standard defined prioritization mechanism. NG-RAN can anyway choose to pause/resume/release those service types or slices or QoE configurations which it wants via implementation. |
| Huawei | No | We think the network can prevent triggering RAN overload recurrence due to QoE resume. RAN3 does not need to send some prioritization to the UE. Also RAN3 has one WA in the last meeting “WA: RAN3 will not pursue prioritization mechanism of different service types or slices for the UE to send pending QoE reports after RAN overload is solved.”. |
| Nokia | No |  |
| **Ericsson** | No |  |
| Samsung | No |  |
| China Unicom | Yes | Agree to introduce prioritization mechanism. Operators can set the priority according to the requirements, otherwise it can only rely on the gNB implementation. But due to the time left in R17, we are fine to leave it to R18. |

### Is there a need to send the pause/resume indication to the MCE.

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Qualcomm | Discuss in CB: #QoE2\_Stage?  | There is a similar question in CB: # QoE2\_Stage2 (section 3.3). Probably better to discuss it there? |
| Huawei | No | The motivation is not clear |
| Nokia | No | info not needed at the MCE which belongs to application layer and hence its task is not to analyse RAN load/overload issues |
| **Ericsson** | No |  |
| Samsung  | No |  |
| China Unicom | Yes  | We support to send the indication to MCE, since it can notify that there will not have QoE reporting during the period, and also to avoid sending new QoE configuration when RAN overload. |

## Capability indication over NG

### Where to include QoE related capability info, INITIAL UE MESSAGE or UE RADIO CAPABILITY INFO INDICATION or both?

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| --- | --- | --- |
| Company | Yes/No | Comment |
| Qualcomm | Yes | Although RAN2 is discussing the details of QoE capability, RAN3 can parallelly agree that a new **QoE measurement capabilities** IE can be included in the UE RADIO CAPABILITY INFO INDICATION and INITIAL UE MESSAGE (similar to LTE). This UE capability indication over NG will be used by the core network to be aware of UE’s QoE capabilities.  |
| Huawei | Yes for in UE RADIO CAPABILITY INFO INDICATION | After more check, we think the QoE related capability info is not needed in initial UE message based on the following reasons. According to the description of the UE capability transfer in TS 38.331, the NG-RAN does not forward UE capabilities that were received before AS security activation to the CN. In our understanding, the AS security is still not activated when the NG-RAN sends the INITIAL UE MESSAGE. Therefore the UE Application layer measurement capability only need to be introduced in the UE RADIO CAPABILITY INFO INDICATION message. |
| Nokia | Yes for in UE RADIO CAPABILITY INFO INDICATION |  |
| **Ericsson** | UE RADIO CAPABILITY INFO INDICATION | Huawei has a point. |
| Samsung | UE RADIO CAPABILITY INFO INDICATION | Agree with HW |
| China Unicom | UE RADIO CAPABILITY INFO INDICATION |  |

### Which group to decide and define, RAN2 or RAN3? What are the QoE related capabilities?

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| --- | --- |
| Company | Comment |
| Qualcomm | RAN2 should discuss QoE capability details, but RAN3 can agree whether to send this QoE capability to core network and what should be indicated.QoE measurement capabilities IE can at least include the “**supported service types for QMC**”.Whether to also include “The maximum number of UE application layer measurements” and “RVQoE capabilities” can be FFS |
| Huawei | We think it is RAN2 to decide the details of the UE capabilities. RAN3 can decide how to include the UE capabilities over NG. |
| Nokia | RAN2 has to work on this. Already requested in LS from RAN3. |
| **Ericsson** | RAN2 does not own this, this info should be present in both Uu an NGAP. The content is:* The supported service types for QMC – codepoints already agreed.
* The maximum number of QMC configurations that a UE can be configured with (RAN2 to decide about the max value).
* The UE’s capability of collecting RAN visible QoE metrics: capability per se and which of the two agreed metrics the UE is able to collect.
 |
|  Samsung | We also think it should be RAN2 to define QoE related capabilities first. |
|  China Unicom | Agreed with Huawei |

### Whether to send Max Number of UE Application Layer Measurements to CN

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| Company | Yes/No | Comment |
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| Qualcomm | Probably no | In our view, “Max Number of UE Application Layer Measurements” can be useful at the AMF to know the upper limit of the QoE configurations that a UE can be configured with. If the number of s-based QoE configurations already configured by AMF is greater than this upper limit, then the AMF can restrain from configuring any more s-based QoE.But the drawback is that AMF is not aware of m-based QoE configurations at the UE and cannot decide appropriately whether or not to configure any more s-based QoE. Hence this is probably not so useful. |
| Huawei | No | We think In our understanding, the motivation is to ensure that the number of UE application layer measurement from the CN does not exceed the max number of Application Layer Measurements a UE can support. We think this is not needed based on the following reasons:* It will increase the complexity of the CN. The CN needs to select parts of the application layer measurements based on this max number of application layer measurements. Also, after the release of the services that have been configured for the QoE measurements, the CN needs to send the UE Context Modification request message to the NG-RAN for QoE measurements of other service types.
* NG-RAN can ensure the number of QoE measurement does not exceed the max number. For the QoE measurements that have not been configured for the UE, the RAN can configure them after the release/end of the existing QoE measurements and also can propagate them to the target RAN. Therefore there is no issue even if the RAN only send parts of QoE measurements to the UE.
* Also we think the RAN can configure both the management based and signalling based QoE measurement for the same UE. The CN does not know the exact number of the management based QoE measurements that have been configured for the UE. Therefore it is better for the RAN to select the QoE measurements received from the CN based on the max number of QoE measurement that the UE supports.
 |
| Nokia | No | Handling in CN and RAN should be as simple as possible (ideally just forward configurations). |
| **Ericsson** | Yes, but as an OCTET STRING | In fact, the AMF need not use this info – the info can be sent from RAN to AMF as OCTET STRING for further use, where AMF can send back to RAN when needed (e.g. at INITIAL CONTEXT SETUP REQUEST). RAN can then ensure that the number is not exceeded. Moreover, the OAM should be aware of this value. |
| **Samsung** | No | OAM is aware of the Max Number for s-based QMC, gNB is aware of the Max Number for both s-based and m-based QMC, and s-based QMC can override the m-based QMC, all of them ensure the No. of QMC for a UE will not exceed the Max Number, so there’s no need for AMF to know this Max Number |
| **China Unicom** | No | Agreed with Huawei |

## Miscellaneous

### Renaming IE for “QMC Activation” and “UE Application layer measurement information”

Moderator’s note: as proposed in [9], replace the name of ‘QMC Activation IE’ and ‘UE Application layer measurement information IE’ with ‘QMC Configuration IE’ and ‘UE Application layer measurement configuration information IE’ respectively.

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| Company | Yes/No | Comment |
| Qualcomm | No | The existing names are probably better. Also we should align this with XnAP. |
| Huawei |  | No strong views  |
| **Ericsson** | We propose another name | In fact, we propose in [2]:* QMC Activation IE -> QMC Information List
* UE Application layer measurement information IE -> QMC Information
 |
| Samsung | See the comment | We prefer “QMC Activation IE” No strong view on the left IE. |
|  |  |  |

### Others

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

#### Issue 1: MDT Alignment info in NGAP messages

We need to support the MDT alignment info in NGAP, given that it is already agreed as optional IE IN XnAP BL CR. So, we needs to discuss the following proposal from [2]:

**Proposal 5: The MDT Alignment Information CHOICE structure is optionally present in the UE Application Layer Measurement IE in NGAP.**

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| Company | Yes/No | Comment |
| Samsung | Yes  | The MDT alignment info in NGAP should be aligned with XnAP for mobility case. |

#### Issue 2:

# Conclusion, Recommendations [if needed]

If needed

# References

1. R3-220131, LS on the mapping between service types and slice at application (SA5) LS in
2. R3-220168, (TP for QoE BL CR for TS 38.413) QoE Configuration and Reporting (Ericsson) other
3. R3-220175, [Draft] Reply LS on Mapping Between Service Types and Slice at Application (Ericsson) LS out To: SA5 CC: RAN2, SA4
4. R3-220272, QoE configuration details (Qualcomm Incorporated) discussion
5. R3-220329, Clarifications on configuration aspects (Nokia, Nokia Shanghai Bell) discussion
6. R3-220874, Remaining issues on per-slice QoE measurement (CMCC) discussion
7. R3-220921, Further discussion on per-slice QoE (Samsung) discussion
8. R3-220935, Discussion on NR QoE configuration details (CATT) discussion
9. R3-220960, Discussion on NR QoE Configuration details (ZTE, China Telecom, China Unicom) discussion
10. R3-220961, (TP to BL CR of TS 38.413) NR QoE Configuration (ZTE, China Telecom) other
11. R3-220908, Further discussions on configuration details (Huawei) Discussion
12. R3-220909, TP to 38.413 on further configuration details (Huawei) Other