**3GPP TSG-RAN WG2 Meeting #117R2-22xxxxx**

**eMeeting, 21st February – 3rd March, 2022**

**Title:** LS on RAN2 agreements on NR QoE

**Response to: -**

**Release:** Rel-17

**Work Item:** NR\_QoE-Core

**Source:** RAN2

**To:** CT1, SA4, RAN3, SA5

**Cc:**

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**Attachments:** None

**1. Overall Description:**

RAN2 has discussed NR QoE in RAN2#116b-e and RAN2#117-e meetings, and the agreements are listed in section 4. It is noted that UE capabilities part will be checked in another LS.

[FFS whether to include QoE CRs in the LS in order to help the target WGs better understand RAN2 impacts of the feature]

**2. Actions:**

**To CT1, SA4, RAN3, SA5:**

**ACTION:** RAN3 respectfully asks CT1, SA4, RAN3, and SA5 to consider RAN2 agreements in their future work.

**3. Date of Next TSG-RAN WG2 Meetings:**

TSG-RAN WG2 Meeting #118-e 16 – 27 May 2022 Electronic

TSG-RAN WG2 Meeting #119 August 2022 Electronic

**4. RAN2 agreements made at RAN2#116b-e and RAN2#117-e meetings**

RAN2#116-e agreements:

* On RVQoE metrics reporting, RAN2 arrived at the following possible assumptions as starting points.

Assumption 1a: RAN2 specifies the maximum number of buffer level entries (ASN.1 value) for each buffer level metric report in one reporting message.

Assumption 1c: It is UE implementation on which buffer level entries should be reported for each buffer level metric report when the received number of buffer level entries exceeds the maximum number.

Assumption 2a: The parameter “t” is not reported for each buffer level entry.

Assumption 2b: It is expected that application layer does not send parameter “t” to AS layer.

Assumption 3: Taking the granularity 10ms for level value as baseline, i.e. integer value 1 correspnds to 10ms, value 2 corresponds to 20ms, and so on.

Assumption 4a: Taking the maximum value of 5min as baseline for level value range.

Assumption 4b: UE sets the value to 5min if the received level value is more than 5min.

Assumption 5: Taking the maximum value 30 seconds as baseline for playout delay for media startup value range.

Assumption 6: Taking the granularity 1ms as baseline for playout delay, i.e. integer value 1 correspnds to 1ms, value 2 corresponds to 2ms, and so on.

* Send LS to SA4 and to RAN3 about the above assumptions, and also indicate that RAN2 doesn't consider itself as the main responsible group for definition of RV QoE metrics, so the decision whether to use these assumptions is in the hands of the receiving group(s). Can also include other agreements on RV QoE

OFFLINE AGREEMENTS [029]

* [029] RVQoE configuration can share the same measConfigAppLayerId and service type RRC IEs with legacy QoE configuration.
* [029] Modification of RVQoE configuration can be supported from RRC layer point of view, it can be revisited if any problem according to further stage 3.
* [029] RAN2 confirm it is feasible that NG-RAN can release a list of RAN visible QoE configurations while not releasing the corresponding legacy QoE configuration and if the corresponding legacy QoE configuration is released, the RAN visible QoE configuration is released as well.
* [029] RVQoE measurements can be included into *MeasurementReportAppLayer* message.
* [029] MeasConfigAppLayerId can be used to identify both of associated legacy QoE report and RVQoE report, and it is irrespective whether RVQoE should be reported independently or together with legacy QoE.
* [029] Multiple RVQoE reports can be included in one *MeasurementReportAppLayer* message, and can be revisited according to legact QoE reporting progress.

[029] Chair Comment: The above agreements uses somewhat incorrectly the word “legacy” to denote the non-RAN-Visible QoE (in this release). Note that the word legacy is forbidden in TSes.

* Upper layers are informed of the release of the application layer measurements at RRCSetup (can be done if RRC setup is provided as a response to RRCresumerequest or RRC reestablishmentrequest).
* At Resume with delta configuration the network indicates possible differences to the QoE configurations.
* At mobility with fullConfig, upper layers are informed of the release of the application layer measurements if no measConfigAppLayerId is indicated by the network.
* Except for restarts transmission of QoE reports after handover, The TP in the Annex of R2-2200011 is included in the running CR for QoE measurements.
* AS layer is responsible for storing QoE reports when the UE receives QoE pause indication at RAN overload (overrides earlier decisions)
* There is no need for interaction between AS and Application for Pause Resume (overrides earlier decisions)
* The minimal memory size of QoE paused measurements report is 64KB
* At RAN overload scenarios, when the memory reserved for the QoE paused measurements becomes full, the UE is allowed to discard extra QoE paused measurements report. The action of how UE AS layer discards extra QoE paused measurements report is based on UE implementation.
* When the UE receives QoE resume indication after RAN overload, AS layer should send the stored QoE paused measurements report to the RAN.
* Send LS to SA4 to explain that with RRC segmentation the max container size (for the report container) can be different and can change by AS reconfigurations. Ask whether the application can/would take this into account and whether this need explicit indication.

Offline Agreements [030]

* [030] Mulitple QoE reports can be sent in one MeasurementReportAppLayer message.
* [030] There can be both multiple QoE reports with different measConfigAppLayerId and multiple QoE reports with the same measConfigAppLayerId in the MeasurementReportAppLayer message.
* [030] The maximum size of the QoE configuration container is specified as a maximum size 8000 (Bytes) of the OCTET STRING in ASN.1.
* [030] No max size of the OCTET STRING for the QoE report container is specified in ASN.1.
* [030] Send a reply LS to SA4 with the RAN2 agreements related to RRC segmentations and container size limitations.
* [030] Inform CT1 that the service type does not need to be forwarded to the application layer at release.
* [030] Inform CT1 that the QoE configurations can be configured as a list in NR and ask them to take this into account when specifying the AT-command.
* [030] Inform CT1 that all QoE configurations may need to be released without any measConfigAppLayerId being indicated from the AS-layer and ask them to take this into account when specifying the AT-command.
* [030] Send an LS to CT1 and inform them of the RAN2 agreements with impact on AT-commands.

RAN2#117-e agreements:

* SRB4 is used to transmit RAN visible QoE measurements.
* A parameter per service type indicating whether UE supports RAN visible QoE capability.
* RAN2 assumes that No UE capability parameters of the alignment of QoE and MDT need to be introduced.
* 1-bit indication added in the MeasurementReportAppLayer message is used to indicate session start/stop for each QoE configuration, sent with Meas ID (as other reports)
* Indication of Session start/stop is configurable per QoE configuration.
* RRC segmentation capability can be optional with UE capability parameter (one extra bit).
* R2 assumes Pause and resume capability is one of basic sub-features of QoE. (This may be revisited in Q2, if UE vendors find that this requirement is a blocker for wide deployment of QoE reporting).

We send LS, primarily to request SA4 and CT1 to take into account, and feedback if there are concerns.

* Pause Resume is not applicable to RVQoE
* The UE keeps stored QoE reports (while in Paused state) when going to RRC\_INACTIVE if the UE also keeps the AS QoE configuration. If or when the configuration is released, then stored QoE reports if any are discarded.
* RAN2 assumes that AS layer capability will be indicated to network only if the UE is capable also on higher layers
* RAN2 assumes that how AS layer obtain application capability is based on UE implementation (with no AS spec impact).
* We send LS to SA4 (and cc CT1), can elaborate on detailed Questions offline, if needed.