**3GPP TSG-RAN3 Meeting #122 R3-237970**

**Chicago, USA, 13th – 17th November, 2023**

**Title:** (TP to BL CR of 38.300) on intra-system inter-RAT handover for QoE measurement

**Source:** Huawei, China Telecom, China Unicom

**Agenda item:** 11.4

**Document Type:** discussion and decision

# 1. Introduction

In this paper, we provide our text proposals on intra-system inter-RAT handover and CHO for QoE measurement, as discussed in [1].

# 2. TP to 38.300

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21.2.1 QoE Measurement Collection Activation and Reporting

The feature is activated in the gNB either by direct configuration from the OAM system (management-based activation), or by signalling from the OAM via the 5GC (signalling-based activation), containing UE-associated QoE configuration. One or more QoE measurement collection jobs can be activated at a UE per service type, and each QoE measurement configuration is uniquely identified by a QoE reference.

For signalling-based QoE measurements, the OAM initiates the QoE measurement activation for a specific UE via the 5GC, and the gNB receives one or more QoE measurement configurations by means of UE-associated signalling. The QoE measurement configuration for signalling-based activation includes an application layer measurement configuration list and the corresponding information for QoE measurement collection, e.g., QoE reference, service type, MCE IP address, slice scope, area scope, MDT alignment information, assistance information and the indication of available RAN visible QoE metrics.

For management-based QoE measurement activation, the OAM sends one or more QoE measurement configurations directly to the gNB. The QoE measurement configuration for management-based activation also includes an application layer measurement configuration list and the corresponding information for QoE measurement collection. The gNB selects UE(s) that meet the required QoE measurement capability, area scope, assistance information and slice scope.

Application layer measurement configuration received by the gNB from OAM or CN is encapsulated in a transparent container, which is forwarded to a UE as Application layer configuration in the *RRCReconfiguration* message (there can be multiple configurations in the same message). Application layer measurement reports received from UE's application layer are encapsulated in a transparent container and sent to the network in the *MeasurementReportAppLayer* message, as specified in TS 38.331 [12]. The UE can send multiple application layer measurement reports to the gNB in one *MeasurementReportAppLayer* message. In order to allow the transmission of application layer measurement reports which exceed the maximum PDCP SDU size, segmentation of the *MeasurementReportAppLayer* message may be enabled by the gNB. An RRC identifier conveyed in the RRC signalling is used to identify the application layer measurement configuration and report between the gNB and the UE. The RRC identifier is mapped to the QoE reference in the gNB, and the gNB forwards the application layer measurement report to MCE together with the QoE reference. The gNB can release one or multiple application layer measurement configurations from the UE in one *RRCReconfiguration* message at any time. The UE may additionally be configured by the gNB to report when a QoE measurement session starts or stops for a certain application layer measurement configuration.

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21.3 QoE Measurement Continuity for Mobility

QoE measurement collection continuity for intra-system intra-RAT handover is supported, with the Area Scope parameters configured by the OAM, where the network is responsible for keeping track of whether the UE is inside or outside the area scope. A UE continues an ongoing QoE measurement even if it leaves the area scope, unless the network indicates to the UE to release the application layer measurement configuration.

For handover, the source gNB may transmit the information related to one or more application layer measurement configurations of the UE to the target gNB via XnAP or NGAP. For signalling-based QoE, the service type indication, QoE reference, and, optionally, the MCE IP address, measurement configuration application layer ID, MDT alignment information, area scope, slice support list for QMC, available RAN visible QoE metrics and measurement status are passed to the target gNB. For management-based QoE, the service type indication, measurement configuration application layer ID, the MCE IP address and QoE measurement status are passed to the target gNB. For RRC\_INACTIVE state mobility, QoE measurement configuration(s) of a specific UE can be retrieved from the gNB hosting the UE context when it resumes to the RRC\_CONNECTED state.

For signalling-based QoE, at handover to a target gNB that supports QoE measurement collection, the target gNB decides which of the application layer measurement configurations should be kept or released, e.g., based on application layer measurement configuration information received from the source gNB in Xn/NG signalling.

For QoE sessions pertaining to data flows received via MBS broadcast, QoE measurement collection may continue during the RRC\_INACTIVE and RRC\_IDLE states, and the measurement results, if collected, may be provided to the network when the UE returns to the RRC\_CONNECTED state.

Upon UE’s transition from the RRC\_IDLE to the RRC\_CONNECTED state, the gNB serving the UE should ensure that it does not release an already configured signaling based QoE measurement configuration for the sake of configuring a new management-based QoE measurement configuration.

When the UE resumes the connection with a gNB that does not support QoE, the UE releases all application layer measurement configurations.

QoE measurement collection continuity for intra-system inter-RAT handover is supported. For the handover from NR to LTE, only one QoE measurement can be kept, the source node decides which QoE measurement to keep and sends this QoE measurement to the target node.

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# 3. Reference

[1] R3-237722, Further discussion on remaining open issues and leftovers, Huawei