3GPP TSG-RAN WG3 Meeting #122 R3-237896

**Chicago, US, 13-17 Nov, 2023**

Agenda Item: 10.2.2

Source: Huawei

Title: (TP for SON BLCRs for 36.300) MRO

Document for: Other

# Introduction

This is a TP capturing agreements in RAN3#122.

# Annex Text Proposal to TS 36.300

<<<<<<<<<<<<<<<<<<<< First Change >>>>>>>>>>>>>>>>>>>>

22.4.2 Support for Mobility Robustness Optimisation

/Unchanged part omitted/

22.4.2.2a Connection failure due to inter-RAT mobility

One of the functions of Mobility Robustness Optimisation is to detect connection failures that occurred due to Too Early or Too Late inter-RAT handovers or Inter-system Mobility Failure for Voice Fallback. These problems are defined as follows:

- [Too Late Inter-RAT Handover] An RLF occurs after the UE has stayed in an E-UTRAN cell for a long period of time; the UE attempts to re-connect to a UTRAN cell.

- [Too Early Inter-RAT Handover] An RLF occurs shortly after a successful handover from a UTRAN cell to a target cell in E-UTRAN; the UE attempts to re-connect to the source cell or to another UTRAN cell.

- [Inter-system Mobility Failure for Voice Fallback] An RLF occurs shortly after a successful handover triggered due to Voice Fallback, or a failure occurs during an handover triggered due to Voice Fallback, from a cell belonging to an NG-RAN node to a cell belonging to an E-UTRAN node; the UE attempts to re-connect to a cell belonging to an E-UTRAN node, or an NG-RAN node.

The UE makes the RLF Report available to an eNB, when RLF happens in E-UTRAN and the UE re-connects to an eNB cell. Availability of the RLF Report at the RRC connection setup or at a handover to E-UTRAN cell is the indication that the UE suffered a connection failure and that the RLF Report from this failure was not yet delivered to the network.

The eNB receiving the RLF Report from the UE may forward the report to the eNB that served the UE before the reported connection failure using the RLF INDICATION message over X2 or by means of the eNB configuration transfer procedure and MME configuration transfer procedure over S1. If present in the RLF Report, the radio measurements may be used to identify lack of coverage as the potential cause of the failure. This information may be used to exclude those events from the MRO evaluation and redirect them as input to other algorithms.

Detection mechanisms for Too Late Inter-RAT Handover, Too Early Inter-RAT Handover and Inter-system Mobility Failure for Voice Fallback are carried out through the following:

- [Too Late Inter-RAT Handover]  
The connection failure occurs while being connected to an LTE cell, and there is no recent handover for the UE prior to the connection failure i.e., the UE reported timer is absent or larger than the configured threshold, e.g., Tstore\_UE\_cntxt, and the first cell where the UE attempts to re-connect is a UTRAN cell.

- [Too Early Inter-RAT Handover]  
The connection failure occurs while being connected to an LTE cell, and there is a recent inter-RAT handover for the UE prior to the connection failure i.e., the UE reported timer is smaller than the configured threshold, e.g., Tstore\_UE\_cntxt, and the first cell where the UE attempts to re-connect and the cell that served the UE at the last handover initialisation are both UTRAN cells.

- [Inter-system Mobility Failure for Voice Fallback]  
The connection failure occurs while being connected to an LTE cell, and there is a recent Inter-system handover due to voice fallback from NR prior to the connection failure i.e., the UE reported timer is smaller than the configured threshold, e.g., Tstore\_UE\_cntxt. The RLF Report from the UE includes a voice fallback indication.

The "UE reported timer" above indicates the time elapsed since the last handover initialisation until connection failure.

In case the failure is a Too Early Inter-RAT Handover, the eNB receiving the RLF INDICATION message may inform the UTRAN node by means of the eNB Direct Information Transfer procedure over S1. The information contains:

- Type of detected handover problem (Too Early Inter-RAT Handover);

- UE RLF Report Container: the RLF Report received from the UE, as specified in TS 36.331 [16];

- Mobility Information (optionally, if provided in the last Handover Resource Allocation procedure from the UTRAN node);