3GPP TSG-RAN WG3 Meeting #127 R3-250854

Athens, Greece, 17 – 21 February, 2025

**Agenda item:** 10.2

**Source:** Nokia

**Title:** (TP for SON BL CR for TS 37.340) MRO enhancement for CHO with Candidate SCG(s)

Document for: Discussion

# 1 Introduction

# This contribution provides the TP for TS37.340 on MRO for CHO with Candidate SCGs.

# 2 TP for TS 37.340

10.18.3 Conditional PSCell addition or change failure

One of the functions of self-optimization for CPAC is to detect CPAC failures that occur due to Too late CPC execution or Too early CPC/CPA execution, or CPC/CPA execution to wrong PSCell. These problems are defined as follows:

- Too Late CPC Execution: UE receives CPC configuration/S-CPAC configuration, while a SCG failure occurs before CPC execution; a suitable PSCell different from source PSCell is found based on the measurements reported from the UE.

- Too Early CPC/CPA Execution: CPC/CPA execution is not successful or an SCG failure occurs shortly after a successful CPC/CPA execution; in case of CPC, the source PSCell is still the suitable PSCell based on the measurements reported from the UE; in case of CPA, no suitable PSCell is found based on the measurements reported from the UE.

- CPC/CPA Execution to wrong PSCell: CPC/CPA execution is not successful or an SCG failure occurs shortly after a successful CPC/CPA execution; a suitable PSCell different from the source PSCell or the target PSCell is found based on the measurements reported from the UE. There are two sub-cases for wrong candidate PSCell list selection:

- if the suitable PSCell is one of the candidate target PSCells provided by the node initiating the CPC/S-CPAC or by the MN initiating the CPA, but not one of the candidate PSCells selected by the candidate or target SN, it is wrong target PSCell selection at the candidate or target SN;

- else, it is wrong candidate PSCell list selection at the node initiating the CPC/S-CPAC or at the MN initiating the CPA.

In the definition above, the "successful CPC/CPA execution" refers to the UE state, namely the successful completion of the RA procedure.

**Detection mechanism**

The MN performs the initial analysis when *SCGFailureInformation* is received from the UE. In the first step, MN verifies whether intra-SN PSCell change has been triggered in the last serving SN. In case the intra-SN PSCell change has been triggered in the last serving SN, the MN forwards the SCG Failure Information Report message to this last serving SN, which performs the final root cause analysis. In case of no intra-SN PSCell change, the MN determines the type of PSCell addition/change, e.g., whether it is CPA or CPC in case of conditional mobility, if CPC whether it is MN initiated or SN initiated.

The detailed detection mechanisms for Too Late CPC Execution, Too Early CPC/CPA Execution and CPC/CPA Execution to wrong PSCell are carried out in the NG-RAN node which initiates the CPC/CPA or S-CPAC procedure:

- Too Late CPC Execution: if CPC/S-CPAC is configured and there is no recent CPC execution for the UE prior to the connection failure e.g. the UE reported timer is absent or larger than the configured threshold (e.g. Tstore\_UE\_cntxt) , and there is a suitable PSCell different from the PSCell where the UE is located at the time of the failure occurrence.

- Too Early CPC/CPA Execution: there is a recent CPC/CPA execution for the UE prior to the connection failure e.g. the UE reported timer is smaller than the configured threshold (e.g. Tstore\_UE\_cntxt), and in case of CPC, the source PSCell is a suitable PSCell, in case of CPA, no suitable PSCell is found.

- CPC/CPA Execution to wrong PSCell: there is a recent CPC/CPA execution for the UE prior to the connection failure e.g. the UE reported timer is smaller than the configured threshold (e.g. Tstore\_UE\_cntxt), and the suitable PSCell is not the source PSCell or the target PSCell.

The "UE reported timer" above indicates the time elapsed since the CPC/CPA execution until connection failure.

For CPA or MN initiated CPC or initial S-CPAC initiated by MN, if the suitable PSCell is one of the candidate PSCells provided by the MN at CPAC preparation, but not one of the candidate PSCells selected by the candidate or target SN, MN sends the SCG Failure Information Report message to the candidate or target SN, which perform the final MRO related optimisation. Otherwise, the MN performs the final MRO related optimisation.

For SN initiated CPC or a following S-CPC initiated by MN, the MN sends the SCG Failure Information Report message to source SN, and source SN performs root cause analysis. If the suitable PSCell is one of the candidate PSCells provided by the source SN, but not one of the candidate PSCells selected by the candidate or target SN, the source SN indicates to MN that the root cause of the SCG failure may have occurred in the other nodes. MN then sends the SCG Failure Information Report message to the candidate or target SN. Otherwise, the source SN performs the final MRO related optimisation.

*Editor’s note: The forwarding mechanism in the above two paragraphs needs to be further checked.*