**3GPP TSG-RAN WG3 Meeting #125bis R3-245759**

**Hefei, CN, Oct 14 - Oct 18, 2024**

**Agenda item: 10.4**

**Source: CMCC (moderator)**

**Title: Summary of SONMDT for R18 leftovers**

Document for: Approval

# Introduction

This CB will mainly discuss the leftovers in Rel-18 SON/MDT:

* RACH optimization for SDT
* MHI Enhancement for SCG Deactivation/Activation
* MRO for MR-DC SCG failure

During previous meeting, the related agreements are as follows:

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| *MRO for MR-DC SCG failure:**Keep the following R18 agreement in R19:**Support MRO for SCG failure in EN-DC, NGEN-DC and NE-DC scenarios.**LS to RAN2 on the feasibility to support MRO for SCG failure in R19 in* [*R3-242195*](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_123-bis%5CInbox%5CR3-242195.zip)*RACH optimization for SDT:**Work on scenario of RACH optimization for SDT first.**There is no need for UE to report SDT configurations, e.g., RSRP threshold, data volume threshold, T319a, and other configurations.**RAN3#125:**MRO for MR-DC SCG failure**Take Stage 2 descriptions of PSCell change failure in TS37.340 as baseline for EN-DC and NGEN-DC SCG failure, and necessary updates can be added on top of it if needed.**Introduce new SCG FAILURE INFORMATION REPORT message and SCG FAILURE TRANSFER message over X2 interface.**RACH optimization for SDT**The information that stored and reported in the RA report for SDT:**c. the time from the start of RA-SDT to the reporting of RA report**FFS on other SDT related information.**Check RAN2 progress* |

# For the Chairman’s Notes

MHI Enhancement for SCG Deactivation/Activation

Majority of companies think that both network based solution and UE based solution should be supported for the optimization of dual connectivity configuration.

Draft a reply LS to RAN2.

RACH optimization for SDT

Companies do not reach consensus on which information should be stored and reported in the RA report for SDT.

Due to the limited TU in RAN2, it is not necessary to send an LS to RAN2 in this meeting to inform SDT agreements in RAN3.

MRO for MR-DC SCG failure

Check the TPs and undiscussed issues

# Discussion

## MHI Enhancement for SCG Deactivation/Activation

During this meeting, RAN3 received a LS from RAN2 shown as follows:

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| RAN2 agreed that it is beneficial for the network to have information about time spent in the PSCell in activated state vs. deactivated state:

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| RAN2#127:* It is beneficial for the network to have information about time spent in the PSCell in activated state vs. deactivated state.
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For how to collect the time spent information, there are following two options:Option 1: Network based solution: The network collects the information about time spent in the PSCell in activated or deactivated state.Option 2: UE based solution: The UE includes the information about time spent in the PSCell in activated vs deactivated state in MHI (Mobility History Information).RAN2 kindly asks RAN3 to analyse whether Network based solution is sufficient enough for network optimization, or whether a UE based solution is needed. |

From the contribution provided by companies, there are two opposing views presented.

In [4][7], it is proposed that network-based solution is enough to collect the information about time spent in the PSCell in activated or deactivated state.

In [2][5][9][11], it is proposed that the network-based solution is insufficient for the optimization of dual connectivity configuration, and the UE-based solution is needed.

To illustrate, the following example is given to handle RRC states transitions for UE, and the corresponding information collected by NW in UHI and recorded by UE in MHI respectively.



It can be seen that only the UE maintains all the mobility history information for both RRC\_CONNECTED state and RRC\_IDLE state, the NW only keeps the information of UE in RRC\_CONNECTED state. The MHI can trace the complete trajectory of the UE in all RRC states compared with UHI.

For the UHI of NW, two entries are created for the same UE when UE comes back to RRC\_CONNECTED, and the NW could not link the two entries of the same UE for DC optimization.

**Q1: Whether the network-based solution is insufficient for the optimization of dual connectivity configuration?**

**Moderator summary:**

**Majority of companies think that both network based solution and UE based solution should be supported for the optimization of dual connectivity configuration.**

If companies agree the network-based solution is insufficient, and the UE-based solution is needed, then the time information in SCG deactivated will be reported by UE. The next step is to decide the format of time information.

In [2][11], it is proposed to include in MHI the information of SCG activation/deactivation, e.g., the ratio of time in SCG activated state.

In [5][9], it is proposed to log the real time/accumulated time in SCG activated state during the stay in the PSCell.

**Q2: Which format of time information in SCG deactivated can be agreed?**

**Moderator summary:**

In [11], it is proposed that recording only the percentage of SCG activation time is insufficient, it is also necessary to include UE traffic characteristics (e.g., average throughput ) over SCG together with activation time information.

**Q3: Do companies agree to include UE traffic characteristics (e.g., average throughput) over SCG in MHI?**

**Moderator summary:**

## RACH optimization for SDT

Based on the discussion in last meeting, companies further discuss which information is beneficial for RACH optimization for SDT. The proposed information that stored and reported in the RA report for SDT are summarized as below:

- RSRP when SDT fails [4][10]

- Remaining data volume after SDT transmission [4][10]

- The RSRP and data volume at the time when the UE evaluates if it should perform SDT when SDT fails [5]

- CG-SDT related information if the UE is configured with CG-SDT but fails to initiate the CG-SDT [5]

- indication regarding whether RA-SDT and/or CG-SDT initiation was evaluated [8]

**Q4: Which information mentioned above is needed for RACH optimization for SDT?**

**Moderator summary:**

CATT: RSRP when SDT fails and Remaining data volume after SDT transmission depends on the progress from RAN2.

Qual: Clarify the benefits to report RSRP and remaining data when SDT failure

Lenovo: SDT is initiated during the data transmission but failure

**RAN2’s agreement: The RSRP and data volume at the time when the UE evaluates if it should perform SDT.**

Companies do not reach consensus on which information should be stored and reported in the RA report for SDT.

**Q5: Do companies agree to send an LS to RAN2 to inform RAN3’s agreement in this meeting?**

**Moderator summary:**

From RAN2 perspective, due to the limited TU in RAN2, there is not necessary to send an LS to RAN2 in this meeting to inform SDT conclusion.

## MRO for MR-DC SCG failure

**MRO for SCG failure in ENDC and NGEN-DC**

In last RAN3 meeting, the X2AP TP in R3-244825 has been agreed. Based on the progress with X2AP, a similar enhancement for XnAP needs to be introduced.

In [4][10][11], companies propose to enhance SCG FAILURE INFORMATION REPORT message in Xn interface for NGEN-DC SCG failure to include timeSCGFailure.

**Q6: Do companies agree to** **enhance SCG FAILURE INFORMATION REPORT message in Xn interface for NGEN-DC SCG failure to include timeSCGFailure?**

**Moderator summary:**

[10] proposes to enhance SCGFailureInformationNR message for NGEN-DC SCG failure to include previousPSCellId, failedPSCellId and timeSCGFailure.

**Q7: Do companies agree to** **enhance enhance SCGFailureInformationNR message for NGEN-DC SCG failure to include previousPSCellId, failedPSCellId and timeSCGFailure?**

**Moderator summary:**

In [5], for EN-DC and NGEN-DC case, it states that measResultSCG is encoded in NR format hence LTE MN cannot decode it. It proposes that NR SN selects the next suitable PSCell based on the measResultSCG in SCGFailureInformationNR message for both MN initiate PSCell change and SN initiate PSCell change, and the next suitable PSCell should be included in SCG FAILURE TRANSFER message.

**Q8: Do companies agree to include next suitable PSCell in SCG FAILURE TRANSFER message?**

**Moderator summary:**

**TP for MR-DC SCG failure for 36.423 and 38.423**

**[4]:**

1. Add the procedure text about the Time SCG Failure IE in the SCG FAILURE INFORMATION REPORT message in TS 36.423

2. Add the IE “Time SCG Failure” should be added in the SCG FAILURE INFORMATION REPORT message in TS 38.423

**[5]:**

1. Add the procedure text about the forwarding mechanism for transferring SCG Failure Information Report message in TS 37.340.

**[6]:**

1. Add the stage2 text that the en-gNB shall be restricted to en-gNB acting as Secondary Node in EN-DC for TS 36.423

2. Correct the direction of the SCG failure transfer procedure from MeNB to en-gNB as SN in the illustrated figure 8.7.y.w-1 for TS 36.423.

**[11]:**

1. Add the IE “Time SCG Failure” should be added in the SCG FAILURE INFORMATION REPORT message for TS 38.423

# Conclusion, Recommendations [if needed]

If needed

# References

|  |  |  |
| --- | --- | --- |
| 1 | [R3-245009](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245009.zip) | LS on MHI enhancement solution for SCG deactivation/activation (RAN2(China mobile)) |
| 2 | [R3-245534](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245534.zip) | MHI and UHI Enhancement for SCG Deactivation Activation (CMCC, Huawei, CATT, Ericsson, Lenovo, ZTE) |
| 3 | [R3-245233](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245233.zip) | [DRAFT] Reply LS on MHI enhancement solution for SCG deactivation/activation (Huawei, CMCC, Ericsson, ZTE [will be RAN3]) |
| 4 | [R3-245132](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245132.zip) | (TP for SON BLCR for 38.423, 36.423) Rel-18 SON and MDT leftovers (Samsung) |
| 5 | [R3-245186](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245186.zip) | (TP for 37.340 and 38.413) SON enhancement for R18 leftover (CATT) |
| 6 | [R3-245232](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245232.zip) | (TP for BLCR for SON for 38.413, 36.423) Rel-18 SON and MDT leftovers (Huawei) |
| 7 | [R3-245337](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245337.zip) | UHI enhancements for SCG (de)activation (Qualcomm Incorporated) |
| 8 | [R3-245398](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245398.zip) | Further discussion on RACH optimization for SDT (Ericsson) |
| 9 | [R3-245399](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245399.zip) | (TP for BLCR for SON for TS 38.413) UHI for SCG activation-deactivation (Ericsson) |
| 10 | [R3-245439](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245439.zip) | Discussion on MRO for R18 leftovers (Lenovo) |
| 11 | [R3-245665](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125-bis%5CDocs%5CR3-245665.zip) | (TP to BL CR for 38.413, 38.300, 38.423) Further discussion on Rel-18 leftovers (ZTE Corporation) |