**3GPP T****SG-RAN WG2 Meeting #123bis R2-230xxxx**

Xiamen, China, 9- 13October, 2023

Agenda Item: 7.13.7

Source: CATT

Title: [Post123][559][R18 SONMDT] Open issues of SONMDT for NPN (CATT)

Document for: Discussion and Decision

# Introduction

This document is the report of the following email discussion,

* **[Post123][559][R18 SON/MDT] SON/MDT for NPN (CATT)**

Discussion the following FFS issues from FFS1-FFS3

Output: Report

Deadline: long

Please provide your comments before Sep. 26th, 00:00 UTC

# Contact Information

Participants are encouraged to leave their contact information in the following table.

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| Ericsson | Ali Parichehreh | ali.parichehreh@ericsson.com |
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# Discussion

In RAN2#123 meeting, agreements on SON/MDT for NPN achieved by companies are concluded as follows:

Agreements:

1 Include SNPN ID (list) in the logged MDT area configuration following RAN3 agreement to align with the future NPN evolution.

2 No new UE variables will be introduced for PNI-NPNs.

3 UE performs SNPN ID checking before transmitting the information for corresponding SON and MDT reports, upon the network requests for it.

4 Assuming ESNPN is supported, include a list of SNPN IDs in the logged MDT report.

In this email discussion, some FFS on SON/MDT for NPN are listed, and companies can discuss these issues in more detail:

FFS1: Include UE CAG subscription information in the RLF/HOF report:

- CAG subscription statues indication;

- CAG-only indication.

FFS2: RAN2 to discuss whether and how to address the loss issue of logged MDT report when UE switches between SNPN and PN and then send RAN2 decision to RAN3.

- Option 1: Introducing new variables for SNPNs;

- Option 2: Storing only the collected MDT measurements report (UE deletes the MDT configuration as legacy);

- Option 3: No enhancement is needed;

FFS3: RAN2 to discuss:

- Whether and how to introduce information reporting for OOC analysis involving NPN network;

- Whether and which to introduce other SON/MDT enhancements for NPN in this Release.

## UE CAG subscription information in the RLF/HOF report

Three options are summarized in [1] for UE to report for the UE CAG subscription information in the RLF/HOF report. Since “Allowed CAG list” has been excluded during the meeting, the rest options could be further discussed here:

* Option 1: CAG subscription statues indication (if the UE has subscription with any of the CAG IDs broadcast by the cell, and whether the UE only allowed to access CAG cells);
* Option 2: CAG-only indication;
* Option 3: Other information, if any.

**Question 1: Companies are invited to provide the views on whether and which option should be reported by UE for the UE CAG subscription information in the RLF/HOF report.**

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| **Company** | **Option** | **Comments** |
| Ericsson | Option 2,  See comments | We think the benefit of Option 1 for MRO purpose (given the overhead) is not clear.  Option 2 is acceptable, but details can be FFS. |
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## Loss issue of logged MDT report when UE switches between SNPN and PN

In RAN3 LS [2], it is noted that applying the current solution (deleting the MDT reports upon deregistration) would lead to a loss of the stored logged MDT reports if the reports are not retrieved before moving to the network of another type.

Given that mobility between PN and SNPN may occur frequently, RAN3 would like to check with RAN2 if there are any solutions to avoid the loss of stored logged MDT reports upon moving from a network of one type to another type, even upon deregistration. Two solutions have been discussed by RAN2 so far as following.

1. Introduce new SNPN variables for the logged MDT
2. Storing the PN logged MDT measurements upon moving to SNPN, so when the UE returns back to the PN, the PN can fetch the MDT report (in this solution EU deletes only the configuration).

Based on the summary of the discussion provided to the meeting RAN2#123, 3 options were listed and captured as FFS in the chair notes. Hence, we can resume the discussion based on the provided proposal that is captured as FFS. Therefore, the following question based on the captured FFS is formulated.

Question 2: Which of the following options do you agree to be considered in response to the LS received from RAN3 on the wastefulness of the current MDT framework when UE moves frequently between PN and SNPN?

- Option a: Introducing new variables for SNPNs;

- Option b: Storing only the collected public network MDT measurements report, so upon returning back to the PN, the PN can fetch the MDT report (UE deletes the MDT configuration as legacy);

- Option c：No enhancement is needed;

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| **Company** | **Option(a/b/c)**  **Please explain why** | **Comments** |
| Ericsson | Option b | First we would like to highlight that the mobility between public network (PN) and SNPN is much more frequent than mobility between PNs (moving between countries). Therefore, enhancement is needed to avoid unexpected deleting of at least MDT measurements for the public network  We think Option B can be a compromise i.e., upon moving from PN to SNPN, the UE stores only the MDT report, (deletes the MDT configuration), and upon returning to the public network, the network can fetch the collected MDT measurements. |
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## Others

For out-of-coverage scenario, some companies propose to consider information reporting in RLF/HOF report and logged MDT report for out-of-coverage analysis:

1. UE access mode;
2. OOC cause (e.g., whether due to weak coverage or due to cell being barred);
3. SNPN OOC indication (e.g. in RA report, or CEF report, or new report).

**Question 5: Companies are invited to provide the views on whether and which information listed above can be introduced for OOC analysis involving NPN network:**

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| **Company** | **(None/a/b/c)** | **Comments** |
| Ericsson | c | Out of coverage indication can be added to the RA report or CEF report. Details can be FFS. |
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Some companies propose to consider other SON/MDT enhancement use cases for NPN networks. These use cases can potentially be considered quickly, based on the agreed principles made for RLF/HOF report and logged MDT:

1. **For CEF**: Include the SNPN ID into the VarConnEstFailReport and perform checking before sending CEF availability indication;
2. **For L2 measurement**: Report the NPN related information to the TCE together with the L2 measurement (e.g. throughput or data volume measurement);
3. **For RACH report**: UE logs NID in the RA report and checks if NID of the current SNPN matches the SNPN of the previously logged RA reports before logging a new RA report and before transmitting a RA report to the network;
4. **For MHI**: UE logs time spent in the SNPN network in an entry in the existing PN MHI report, and performs PLMN check before transmitting MHI report to network.

**Question 6: Companies are invited to provide the views on whether and which SON/MDT use case(s) listed above should also be considered for NPN enhancement in this Release.**

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| **Company** | **(None/a/b/c/d)** | **Comments** |
| Ericsson | A and C and D | These are functionalities that should be supported in Rel-18 otherwise, it might lead to some privacy/security issues. |
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**Question 7: Companies are invited to provide other issues may need to be discussed, if any.**

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| **Company** | **Comments** |
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# Conclusion

If needed.

# Reference

1. R2-2309023, Summary of 7.13.7 SONMDT enhancements for NPN, CATT
2. R3-232118, LS on potential override of logged MDT reports upon moving from SNPN to PLMN, RAN3