3GPP TSG-RAN WG2 Meeting #121 R2-230xxxx

Athens, Greece, 27 February – 03 March 2023

**Agenda item: 8.13.3**

**Source: Nokia (Rapporteur)**

**Title: Summary of 8.13.3 MDT override**

**WID/SID: NR\_ENDC\_SON\_MDT\_enh2-Core - Release 18**

**Document for: Discussion and Decision**

# 1 Introduction

This document provides the summary of agenda item 8.13.3 (MDT override) considering the following input papers.

[1] [R2-2300293](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2300293.zip) Consideration on Inter-RAT Signaling Based Logged MDT Override Protection CATT discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core

[2] [R2-2300716](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2300716.zip) On MDT override protection Apple discussion NR\_ENDC\_SON\_MDT\_enh2-Core

[3] [R2-2301001](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301001.zip) Signalling based logged MDT override protection Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core

[4] [R2-2301144](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301144.zip) Consideration on MDT override issues ZTE Corporation, Sanechips discussion Rel-18

[5] [R2-2301192](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301192.zip) Inter-RAT signaling based logged MDT override protection Samsung discussion

[6] [R2-2301275](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301275.zip) MDT enhancements Ericsson discussion NR\_ENDC\_SON\_MDT\_enh2-Core

[7] [R2-2301420](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301420.zip) Signalling based logged MDT override protection Qualcomm Incorporated discussion Rel-18

[8] [R2-2301570](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301570.zip) Discussion on the inter-system signalling based MDT override protection Huawei, HiSilicon discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core

[9] [R2-2301631](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_121/Docs/R2-2301631.zip) Considerations on the signaling based logged MDT override protection for E-UTRAN Beijing Xiaomi Software Tech discussion Rel-18

# 2 Discussion

## 2.1 Override protection options

Rapporteurs’ view is that the most important is to address the open issue “EUTRA MDT configuration override protection in inter-RAT scenario realized by simultaneous LTE and NR configuration in the UE.”. The following options are addressed (solution options that were discussed at RAN2119bis, see R2-2210996) in the proposals from the companies:

**Solution 1:** Override protection by simultaneous LTE and NR configuration

**Solution 2:** Override protection by cross-RAT signaling but no cross-RAT reporting of LTE logged MDT report

**Solution 3:** Override protection by cross-RAT reporting of LTE logged MDT report

No companies proposed solution 3, while there are proposals (7 paper out of 9) to exclude solution 3:

**[2] Apple
Proposal 1**: RAN2 to either rule out solution 3 or ask RAN3 and SA5 to assess its complexity

**[3] Nokia
Proposal 4:** Cross-RAT reporting for Logged MDT results (i.e., UE reports E-UTRAN logged MDT results availability in NR) is not supported in Rel-18.

**[4] ZTE
Proposal 1:** RAN2 selects between option 1 and option 2 for handling MDT overwrite issue:
Opt1: Simultaneous MDT configuration for NR and LTE
Opt2: Reuse R17 mechanism (i.e., based on MDT type indication and sigLogMeasConfigAvailable indication)

**[5] Samsung
Proposal 5:** Cross RAT reporting is not supported.

**[7] Qualcomm
Proposal 6:** Even for the UE’s not supporting separate memory for NR and LTE logged MDT, cross-RAT reporting of LTE logged MDT (reporting of EUTRA logged MDT to NR) is not supported

**[8] Huawei
Proposal 1:** Do not support cross-RAT reporting for Logged MDT results.

**[9] Xiaomi
Proposal 2:** No need to support the cross-RAT reporting for Logged MDT results in R18

**Proposal 1.1: Solution 3 (Override protection by cross-RAT reporting of LTE logged MDT report) is excluded from the solution options for override protection.**

Based on the input papers at least 2 companies clearly proposed option 1:

**[3] Nokia
Proposal 1:** The UE supports two Logged MDT contexts storing: one for E-UTRA and one for NR.

**[6] Ericsson
Proposal 1:** UE shall maintain separate instances of EUTRA and NR MDT configurations. Furthermore, EUTRA and NR MDT reports would also be maintained separately in the UE.

Based on the input papers at least 3 companies clearly prefer Option 2:

**[1] CATT
Proposal 1:** RAN2 to agree override protection for LTE Logged MDT by cross-RAT signaling but no cross-RAT reporting when the UE moves to NR from LTE.

**[5] Samsung
Proposal 1:** RAN2 doesn’t consider inter-RAT override protection by simultaneous LTE and NR configuration in the UE

**[9] Xiaomi
Proposal 3:** Solution 2 is considered for the LTE signaling based logged MDT override protection

One company proposed to specify both Option 1 and 2:

**[7] Qualcomm
Proposal 1:** RAN2 is requested to adopt different solution methods, when
- UE supports simultaneous LTE and NR configuration in the UE, and
- UE does not support simultaneous LTE and NR configuration in the UE.

Two companies proposed further discussion for selecting between option 1 and 2:

**[4] ZTE
Proposal 1:** RAN2 selects between option 1 and option 2 for handling MDT overwrite issue:
Opt1: Simultaneous MDT configuration for NR and LTE
Opt2: Reuse R17 mechanism (i.e., based on MDT type indication and sigLogMeasConfigAvailable indication)

**[8] Huawei
Proposal 2:** It is proposed to discuss two options as below, including how it works, pros/cons.
- Option 1: Override protection by simultaneous LTE and NR MDT configurations in a UE
- Option 2: Override protection by cross-RAT signalling but no cross-RAT reporting of LTE logged MDT report

Rapporteur’s understanding is that companies’ view very divergent and thus further discussion is needed.

**Proposal 1.2: Further discuss the advantages and disadvantages of solution 1 (Override protection for logged MDT by simultaneous LTE and NR configuration for logged MDT) and solution 2 (Override protection by cross-RAT signaling but no cross-RAT reporting of LTE logged MDT report) to select a solution for Rel-18.**

## 2.2 Proposals on solution 1

The following proposals were made related to option 1:

**[2] Apple
Proposal 2:** to agree that solution 1 should not impose additional memory requirements on a UE **Proposal 3:** if proposal 2 is not agreeable, additional UE memory increase (above 64kB for both LTE and NR MDT simultaneously) should be optional.

**[3] Nokia
Proposal 2:** The UE does not release Logged Measurement configuration received in E-UTRAN upon reselecting to NR cell. **Proposal 3:** LTE LoggedMeasurementsConfiguration is not extended with “Logged MDT type” IE.

**[6] Ericsson
Proposal 2:** Cross RAT reporting of MDT results is not required if UE maintains separate instances of MDT results. **Proposal 3:** A Rel-18 UE supports simultaneous storage of EUTRA, and NR logged MDT configuration and report if it supports Rel-18 logged measurements in RRC\_IDLE and RRC\_INACTIVE. Thus, the feature is conditional mandatory for UE if it supports Rel-18 logged MDT.

**[7] Qualcomm
Proposal 2:** For UEs supporting simultaneous LTE and NR configuration, the extension of the LTE LoggedMeasurementConfiguration (with Logged MDT type indication) is not required for LTE logged MDT override protection, as intra-EUTRA and NR logged MDT override protection during mobility from NR to LTE are not supported **Proposal 3:** Handling of UE capability signaling at the network is not a specific requirement for supporting override protection in the inter-RAT scenario realized by simultaneous LTE and NR configuration in the UE. No additional UE and network impact.

Rapporteur’s understanding is that these proposals are relevant if solution 1 is selected. As there are some points that are proposed by multiple companies, some proposals may be easily agreed if solution 1 is selected:

**Proposal 2: If solution 1 (Override protection by simultaneous LTE and NR configuration** **for logged MDT) is selected then**

1. **No EUTRA signalling change is needed.**
2. **The need and optionality of UE capabilities for storing simultaneous logged MDT reports require further discussion.**

## 2.3 Proposals on solution 2

The following proposals were made related to option 2:

**[1] CATT
Proposal 2:** Extend the LTE LoggedMeasurementConfiguration to include Logged MDT type indication information. **Proposal 3:** Re-use the existing sigLogMeasConfigAvailable-r17 field to achieve assistance information reporting for inter-RAT signaling based logged MDT override protection.

**[4] ZTE
Proposal 2:** If Option 2 of proposal 1 is selected (i.e., R17 mechanism is used), signalling based logged MDT type indication is included in EUTRA logged MDT configuration. **Proposal 3:** RAN2 further discuss whether priority handling for signalling logged MDT configuration between different RAT types is needed or not in case option 2 of proposal 1 is selected **Proposal 4:** If option 2 of proposal 1 is selected, UE indicates in RRCSetupComplete message there is a available EUTRA signalling based MDT configuration or EUTRA signalling based MDT results unfetched to NW when reselect from EUTRA to NR. ffs reusing existing bit (sigLogMeasConfigAvailable) or introducing new bit.

**[5] Samsung
Proposal 2:** Extend LTE LoggedMeasurementConfiguration with Logged MDT type indication **Proposal 3:** UE informs gNB whether signaling based MDT is configured when it is configured by E-UTRA. **Proposal 4:** R17 NR signaling can be reused by the UE to inform gNB whether signaling based MDT is configured even when it is configured by E-UTRA.

**[6] Ericsson
Proposal 4:** If UEs don’t support separate RAT specific instances of MDT reports, signalling based MDT configuration flag is provided to LTE UEs as part of LTE logged MDT configuration **Proposal 5:** If UEs don’t support separate RAT specific instances of MDT reports; In NR, UE reports availability of signalling based logged MDT configuration without checking the RAT information. **Proposal 6:** If UEs don’t support separate RAT specific instances of MDT reports; the indication in NR to report availability of signalling based logged MDT can be re-used for LTE. **Proposal 7:** If UEs don’t support separate RAT specific instances of MDT reports and if the UE in NR network has LTE signalling based logged MDT report and T330 timer has expired, NR nodes can fetch the LTE logged MDT report

**[7] Qualcomm
Proposal 4:** For UEs that do not support separate memory for NR and LTE logged MDT, the extension of the LTE LoggedMeasurementConfiguration (with Logged MDT type indication) is needed. **Proposal 5:** UEs that do not support separate memory for NR and LTE-logged MDT and when it is configured with LTE signaling-based logged MDT need to send an indication in NR RRC Complete messages.

**[9] Xiaomi
Proposal 1:** Extend LTE LoggedMeasurementConfiguration with logged MDT type indication

Rapporteur’s understanding is that these proposals are relevant if solution 2 is selected. As there are some points that are proposed by multiple companies, some proposals may be easily agreed if solution 2 is selected:

**Proposal 3: If solution 2 (Override protection by cross-RAT signaling but no cross-RAT reporting of LTE logged MDT report) is selected then**

1. **Extend the LTE LoggedMeasurementConfiguration to include Logged MDT type indication information**
2. **NR signaling is needed to inform the gNB that signaling based MDT is configured by E-UTRA**
3. **R17 NR signaling can be reused by the UE to inform gNB whether signaling based MDT is configured even when it is configured by E-UTRA**
4. **Further discuss whether priority handling for signalling logged MDT configuration between different RAT types is needed or not**

## 2.4 Other proposals

There is a proposal that is not related to the selection of the solution option:

**[6] Ericsson
Proposal 8:** RAN2 implement the formula for total RAN delay calculation based on the provided TP and send an LS to SA5 to take the formula into account.

Rapporteur’s view is that the discussion of this issue is not essential for the progress, therefore it can be postponed.

**Proposal 4: Postpone the discussion on proposal 8 of R2-2301275.**

# 3 Conclusions

This summary provides the following proposals:

**Proposal 1.1: Solution 3 (Override protection by cross-RAT reporting of LTE logged MDT report) is excluded from the solution options for override protection.**

**Proposal 1.2: Further discuss the advantages and disadvantages of solution 1 (Override protection for logged MDT by simultaneous LTE and NR configuration for logged MDT) and solution 2 (Override protection by cross-RAT signaling but no cross-RAT reporting of LTE logged MDT report) to select a solution for Rel-18.**

**Proposal 2: If solution 1 (Override protection by simultaneous LTE and NR configuration** **for logged MDT) is selected then**

1. **No EUTRA signalling change is needed.**
2. **The need and optionality of UE capabilities for storing simultaneous logged MDT reports require further discussion.**

**Proposal 3: If solution 2 (Override protection by cross-RAT signaling but no cross-RAT reporting of LTE logged MDT report) is selected then**

1. **Extend the LTE LoggedMeasurementConfiguration to include Logged MDT type indication information**
2. **NR signaling is needed to inform the gNB that signaling based MDT is configured by E-UTRA**
3. **R17 NR signaling can be reused by the UE to inform gNB whether signaling based MDT is configured even when it is configured by E-UTRA**
4. **Further discuss whether priority handling for signalling logged MDT configuration between different RAT types is needed or not**

**Proposal 4: Postpone the discussion on proposal 8 of R2-2301275.**