CB: # SONMDT4_Others_RAN3_117e - Version 0.0.6
RAN3

3GPP TSG-RAN WG3 Meeting #117-e R3-225009

E-Meeting: Aug 15th – Aug 24th, 2022

Agenda item: 10.4

Source: Qualcomm Inc.

Title: Summary of Offline Discussion on CB: # SONMDT4_Others

Document for: Discussion and Decision

1 Introduction

CB: # SONMDT4_Others

- Identify whether there is any impact on RAN3 for signaling based logged MDT override protection

- Capture agreements and open issues

(Qualcomm - moderator)

[NWM] Summary of offline disc R3-225009

Deadline for providing Phase-I comments is 08/18/2022 23:59 UTC.

2 For the Chair's Notes

Proposal 1: It is RAN3's understanding that the Rel-17 feature of signaling based logged MDT override protection applies only during Intra-NR reselection and applies to Intra-5GS (gNB–>gNB).

Proposal 2: It is RAN3's understanding that that the scope of Rel-18 includes override protection for both signaling-based logged MDT configuration and unretrieved signaling-based logged MDT reports during Inter-RAT reselection (E-UTRA–> NR) and intended for Intra-5GS (ng-eNB –> gNB).

Proposal 3: It is RAN3's understanding that the override protection defined for Intra-5GS (as in Proposal 2) can apply to Inter-system (EPS <–> 5GS) depending on the solution defined in RAN2

Proposal 4: There is no consensus in RAN3 on whether any clarification or enhancement are needed for inter-PLMN override protection and this can be discussed in RAN2 directly if needed

Proposal 5: Whether to support cross-RAT logged MDT reporting (i.e., whether the NR node needs to retrieve LTE logged MDT report) for signaling based logged MDT override protection is up to RAN2.

Proposal 6: Wait for RAN2's progress on cross-RAT logged MDT reporting before discussing whether any enhancements are needed for NG-RAN to forward the LTE logged MDT reports to the correct TCE

3 Phase-II Discussion

4 Phase-I Discussion

Rel-17 supports signaling based logged MDT override protection, details of which are mentioned in Annex (Section 6).

This CB is to discuss the following objective from Rel-18 SON/MDT WID, which is a **RAN2-led objective**:

Support of signaling based logged MDT override protection to address the scenario where the signaling based MDT is configured in E-UTRAN when [RAN2, RAN3]:

- UE reselects to NR while logged measurements are collected

- UE reselects to NR after logged measurements are collected and before uploading the logged MDT report

However, the Rel-18 scope is not clear from the WI objective whether to support signaling based (s-based) logged MDT override protection for the s-based logged MDT **configuration** or unretrieved s-based logged MDT **measurements** or for both. Also, it is not clear whether to support the override protection for intra-LTE or inter-RAT (NR –> LTE), inter-system scenarios and inter-PLMN scenarios as mentioned in [1] and [2]. In the following sections, the moderator seeks input from the companies to have clarity on the scenarios to support in Rel-18 before discussing the solutions.

4.1 Override protection of signaling based logged MDT configuration

Consider the scenarios below:

Scenario	Override protection scenario
1a **(already supported in Rel-17)**	**Intra-NR** Intra-5GC: gNB –> gNB Intra-EPC: en-gNB –> en-gNB
1b	**Intra-LTE** Intra-5GC: ng-eNB –> ng-eNB Intra-EPC: eNB –> eNB
1c	**Inter-RAT: LTE –> NR** Intra-5GC: ng-eNB –> gNB Intra-EPC: eNB –> en-gNB
1d	**Inter-RAT: NR –> LTE** Intra-5GC: gNB –> ng-eNB Intra-EPC: en-gNB –> eNB
1e	**Inter-system** EPC –> 5GC 5GC –> EPC

Q1: Companies are requested to provide their views on which scenarios (1b-1e) should be supported in Rel-18 for override protection of s-based logged MDT configuration in addition to scenario 1a which is

already supported in Rel-17? Also please comment on potential RAN3 impacts for supporting the interested scenarios.

Moderator summary: Most companies want to focus the Rel-18 scope to what is mentioned on the WID which is Scenario 1c i.e., inter-RAT reselection from LTE to NR. It is moderator's view that a common solution for LTE to NR reselection in intra-5GS and inter-system is possible based on RAN2 solution. To be safe, the moderator proposes to focus on intra-5GS case (in Proposal 2) but mention that the solution can apply to inter-system case depending on RAN2 solution (in Proposal 3).

Proposal 1: It is RAN3's understanding that the Rel-17 feature of signaling based logged MDT override protection applies only during Intra-NR reselection and applies to Intra-5GS (gNB–>gNB)

Proposal 2: It is RAN3's understanding that that the scope of Rel-18 includes override protection for both signaling-based logged MDT configuration and unretrieved signaling-based logged MDT reports during Inter-RAT reselection (LTE–> NR) and primarily intended for Intra-5GS (ng-eNB –> gNB).

Proposal 3: It is RAN3's understanding that the override protection defined for Intra-5GS (as in Proposal 2) can automatically apply to Inter-system (EPS <–> 5GS) depending on the solution defined in RAN2

Feedback Form 1:

1 – Qualcomm Incorporated Scenario 1c (inter-RAT LTE–> NR) should be supported. Scenario 1e can be supported as well but not sure if there are any RAN3 impacts. Scenario 1b/1d has LTE specification impacts and not explicitly mentioned in the WID either, so should not be supported
2 – HuaWei Technologies Co. we prefer to strictly follow the scope of the WID. And if extension of the scope is needed, it should be decided by RAN2 , because that the main impact is in RRC.
3 – CICT we are not sure whether **Intra-EPC: en-gNB –> en-gNB** in 1a is suppost in REL-17; As our understanding, **Intra-5GC: ng-eNB –> gNB** in 1c and **EPC –> 5GC** in 1e is included in current WI. **Intra-EPC: eNB –> en-gNB** in 1c is not excluded, but actually, we prefer not change the legacy mechanism in LTE.
4 – Samsung R&D Institute UK follow the scope in the WID. ng-eNB to gNB in 1C is in the scope.
5 – Ericsson-LG Co. The scope of the WID covers mobility from E-UTRAN to NR in NG-RAN. This should be covered. Additionally we are supportive of NR in NG-RAN to E-UTRAN mobility.
6 – Ericsson-LG Co. We believe that solutions shold be UE based to achieve a single unified solution. network based solutions have limitations e.g. in inter system, and are subject to complications on how to retrieve information from the old serving node, e.g. in case of Idle mode mobility.

7 – ZTE Corporation Share the view as Huawei and Samsung, follow the scope in the WID.
8 – China Mobile International Ltd Follow the WID, 1c
9 – Nokia France Follow the scope of the WID, which is EPS -> NR cell in 5GS (inter-system, so part of 1e)

4.2 Override protection of unretrieved signaling based logged MDT measurements

Consider the scenarios below:

Scenario	Override protection scenario
2a **(already supported in Rel-17)**	**Intra-NR** Intra-5GC: gNB –> gNB Intra-EPC: en-gNB –> en-gNB
2b	**Intra-LTE** Intra-5GC: ng-eNB –> ng-eNB Intra-EPC: eNB –> eNB
2c	**Inter-RAT: LTE –> NR** Intra-5GC: ng-eNB –> gNB Intra-EPC: eNB –> en-gNB
2d	**Inter-RAT: NR –> LTE** Intra-5GC: gNB –> ng-eNB Intra-EPC: en-gNB –> eNB
2e	**Inter-system** EPC –> 5GC 5GC –> EPC

Q2: Companies are requested to provide their views on which scenarios (2b-2e) should be supported in Rel-18 for override protection of unretrieved s-based logged MDT measurements in addition to scenario 2a which is already supported in Rel-17? Also please comment on potential RAN3 impacts for supporting the interested scenarios.

Moderator summary: All companies also support override protection of un-retrieved signaling based logged MDT measurements in addition to protecting the signaling based logged MDT configuration from an override by management based logged MDT configuration for the same set of scenarios discussed in Q1. This is captured in Proposal 2.

Proposal 2: It is RAN3's understanding that that the scope of Rel-18 includes override protection for both signaling-based logged MDT configuration and unretrieved signaling-based logged MDT reports during Inter-RAT reselection (LTE–> NR) and primarily intended for Intra-5GS (ng-eNB –> gNB).

Feedback Form 2:

1 – Qualcomm Incorporated Scenario 2c and Scenario 2e can be supported (same reasoning as Q1). The intention here is to provide override protection for un-retrieved s-based logged MDT reports as well in addition to override protection for s-based logged MDT configuration in Q1

2 – HuaWei Technologies Co. we prefer to strictly follow the scope of the WID. And if extension of the scope is needed, it should be decided by RAN2 , because that the main impact is in RRC.
3 – CICT same as Q1
4 – Samsung R&D Institute UK follow the WID scope.
5 – Ericsson-LG Co. same as in Q1
6 – ZTE Corporation follow the WID scope.
7 – China Mobile International Ltd follow the WID scope.
8 – Nokia France Same as Q1: Rel-18 work to follow the scope of the WID, which is EPS -> NR cell in 5GS (inter-system, so part of 1e)

4.3 Inter-PLMN override protection

In Rel-17, RAN2 discussed whether to define solutions for inter-PLMN override protection (e.g., whether to define override protection when the UE comes to RRC_CONNECTED in a PLMN that is not in the *plmn-IdentityList* after being configured with signaling based logged MDT) but was deprioritized in Rel-17. This scenario was highlighted in [1] and that RAN3 should discuss whether this should be in Rel-18 scope.

Since this was originally discussed in RAN2, it is the moderator's view to check with RAN2 whether inter-PLMN override protection is to be supported in Rel-18. Also, it is not clear whether there are any RAN3 impacts in order to support this scenario.

Q3: Companies are requested to provide their views on whether inter-PLMN override protection should be supported in Rel-18 and if there are any RAN3 impacts?

Moderator summary: Almost all companies think this is out of WID scope. One company however wants to clarify with RAN2 on some aspects of inter-PLMN override protection. The company's view is that in case of inter-PLMN mobility to PLMN B, the UE will not inform the network about available logged MDT measurements if PLMN B is not included in the plmn-IdentityList contained in the LoggedMeasurementConfiguration IE. It is moderator's view that indeed there is no override protection in

case UE connects to a PLMN outside the plmn-IdentityList and don't think if such an override protection is even needed. Since this was discussed in RAN2 first, the moderator proposes to have any further discussion on inter-PLMN override protection directly in RAN2 and hence Proposal 4.

Proposal 4: There is no consensus in RAN3 on whether any clarification or enhancement are needed for inter-PLMN override protection and this can be discussed in RAN2 directly if needed

Feedback Form 3:

1 – Qualcomm Incorporated Not sure if there are any RAN3 impacts, maybe in the handling of MDT PLMN list. Since this was originally discussed in RAN2, we can simply ask RAN2 without making a decision in RAN3.
2 – HuaWei Technologies Co. we prefer to strictly follow the scope of the WID. And if extension of the scope is needed, it should be decided by RAN2 , because that the main impact is in RRC.
3 – CICT Inter-PLMN override protectionnot is out of scope.
4 – Samsung R&D Institute UK first follow the WID scope. This issue need further discussion.
5 – Ericsson-LG Co. This topic is out of scope of th eWID
6 – ZTE Corporation follow the WID scope.
7 – China Mobile International Ltd follow the WID scope.
8 – Nokia France Our understanding is that the Rel-17 feature works independently of PLMN id, which means that inter-PLMN override protection is supported in the Rel-17 scenario (intra 5GS). But we also see that companies comment above that inter-PLMN protection is out of the Rel-18 scope. The current Rel-17 inter-PLMN protection means that after inter-PLMN mobility from PLMN A to PLMN B, a UE which was configured with s-based MDT in PLMN A will be unavailable for m-based MDT in PLMN B. We are not sure this was intended by RAN2. The RAN3 signalling is designed so that inter-PLMN transfer of MDT related information is under operator control, and if RAN2 intended to apply a different principle for override protection this would require clarification.

4.4 LS to RAN2

Since RAN2 is the leading WG for this objective and there might be parallel discussions in RAN2, it is moderator's view that RAN3 should LS RAN2 seeking clarification on the scenarios to be supported (as listed in section 4.1, 4.2 and 4.3) before proceeding with the solutions and identifying further RAN3 impacts.

Q4: Companies are requested to provide their views on whether an LS to RAN2 seeking clarification on the scenarios is needed? (Yes/No)

Moderator summary: 4 companies think LS to RAN2 can be sent, 2 companies have no strong view and 2 companies think there is no need to send LS and we can wait for RAN2 progress. Since there is no consensus and RAN2 has also started discussions, moderator proposes to not send LS in this meeting and wait for RAN2 progress instead.

Feedback Form 4:

1 – Qualcomm Incorporated Yes, LS is needed seeking clarification on scenarios to support
2 – HuaWei Technologies Co. OK to send the LS. but the LS should focus on RAN3 clarification on the scope of MDT related topics.
3 – CICT yes
4 – Samsung R&D Institute UK No strong view. I guess RAN2 also start the discussion from the scope in WID.
5 – Ericsson-LG Co. The lead group o nthis work is RAN2. While it is ok to check companies positions in RAN3 we shoudl not jump the gun and trigger discussions in RAN2 before RAN2 has concluded. We therefore do not support an LS to RAN2 at this point in time.
6 – ZTE Corporation No strong view, RAN2 is also discuss the scope
7 – China Mobile International Ltd Not neccesary, RAN2 has sub-sgenda for this onjective and they are responsible for this.
8 – Nokia France We expect that the Rel-18 work will follow the WID scope, but believe that the principles to be applied for inter-PLMN scenario requires clarification as discussed above (there is no guidance in the WID on this point). If needed, RAN3 might in the LS remind RAN2 about inter-PLMN principles applied so far in signalling on network interfaces.

4.5 Cross-RAT logged MDT retrieval

The paper [3] mentions that whether the NR node can retrieve LTE logged MDT report or vice-versa should be up to RAN2. The moderator therefore puts up the following proposal:

Moderator Proposal 1: Whether the NR node needs to retrieve LTE logged MDT report or vice-versa for signaling based logged MDT override protection is up to RAN2. LS RAN2 to check whether it is to be supported in Rel-18

Q5: Companies are requested to provide their views on whether Moderator Proposal 1 can be agreed (Yes/No).

Moderator summary: Most companies want RAN3 to wait for RAN2's progress on cross-RAT logged MDT reporting and hence Proposal 5.

Proposal 5: Whether to support cross-RAT logged MDT reporting (i.e., whether the NR node needs to retrieve LTE logged MDT report) for signaling based logged MDT override protection is up to RAN2.

Feedback Form 5:

1 – Qualcomm Incorporated Yes, RAN2 should clarify this. There are some complications to support cross-RAT logged MDT retrieval and reporting in both RAN2 specs and RAN3 specs (see Q6). We therefore think cross-RAT logged MDT retrieval and reporting should not be supported
2 – HuaWei Technologies Co. Technically, there are other options. like reporting when the UE is back to the previous RAT. At this early stage, it's better to not exclude any options. Companies may contribute in RAN2 directly on the logged MDT report retrieval on Uu interface in case of cross RAT.
3 – CICT we are not sure this discussion is in our REL-18 scope. We acknowledged that it has advantage for resueing the subscriber UE for MDT□but it will introduce lots of discussion and should be explict in WI.
4 – Samsung R&D Institute UK It should be decided by RAN2 since it is about UE reporting.
5 – Ericsson-LG Co. This is a discussion that belongs to RAN2, no need to interfere.
6 – ZTE Corporation Yes, RAN2 should clarify this

7 – Nokia France

OK to mention this aspect in the LS to RAN2. In case of inter-PLMN mobility to PLMN B, the UE will not inform the network about available logged MDT measurements if PLMN B is not included in the plmn-IdentityList contained in the LoggedMeasurementConfiguration IE.

If cross-RAT logged MDT retrieval is supported by RAN2 in Rel-18, [3] mentions that there are some aspects which RAN3 should discuss.

If an NR node can retrieve LTE logged MDT report, how the NG-RAN node forwards the LTE logged MDT reports to the correct TCE is to be discussed by RAN3.

- **Option 1:** LTE logged report can be directly sent to NR TCE (no RAN3 impacts)
- **Option 2:** LTE logged report should be sent to original LTE TCE (RAN3/SA5 impacts e.g., mapping table of TCE and MDT Trace ID should be enhanced)

Q6: Companies are requested to provide their views on the above (Option 1 and 2) and whether SA5 should be liaised in parallel to check the appropriate NG-RAN behaviour

Moderator summary: Most companies think RAN3 can wait for RAN2's progress on cross-RAT logged MDT reporting before discussing whether any enhancements are needed for forwarding LTE logged MDT reports to the right TCE and hence Proposal 6.

Proposal 6: Wait for RAN2's progress on cross-RAT logged MDT reporting before discussing whether any enhancements are needed for NG-RAN to forward the LTE logged MDT reports to the correct TCE

Feedback Form 6:

1 – Qualcomm Incorporated

For option 1, what is unclear is whether it is OK for NG-RAN node to send LTE logged MDT report to NR TCE and NR TCE can then forward to LTE TCE. For Option 2, SA5 impacts are needed to inform the mapping of LTE TCE and MDT Trace ID to NG-RAN node. We propose to wait for RAN2 to confirm whether cross-RAT logged MDT is supported and then check with SA5 on option 1 and 2 only if needed. No need to LS SA5 this meeting.

2 – HuaWei Technologies Co.

wait for RAN2 progress.

3 – CICT

we are not sure this discussion is in our REL-18 scope. We acknowledged that it has advantage for resueing the subscriber UE for MDT□but it will introduce lots of discussion and should be explict in WI.

4 – Samsung R&D Institute UK Discussion on the solution can be start after RAN2 has conclusion on the inter-RAT MDT retrieval.
5 – Ericsson-LG Co. This is a discussion that belongs to RAN2. It is not the time to speculate about possible solutoins. We propose to node this discussion.
6 – ZTE Corporation This potencial issue belong to RAN3 scope. One motivation of this topic is that valuatble MDT report in LTE can not retrieved and send to TCE. So if RAN2 acknowledge it is possible to retrieve LTE MDT report to a NR node, then how does NR doe to handle the report to the right TCE should be discussed in RAN3.
7 – China Mobile International Ltd Wait for RAN2 progress, RAN3 can discuss later
8 – Nokia France Cross-RAT (cross-system) retrieval seems beneficial, and would in principle require coordination of the TCE ids used for different RATs / systems. Maybe the simplest would be to configure a default TCE address for cross-system/RAT uploads, if acceptable by operators.

5 References

Table 3:

[1]	R3-224462	RAN3 aspects of signalling based logged MDT override protection in Rel-18 (Nokia, Nokia Shanghai
[2]	R3-224609	Signaling based logged MDT override protection (Qualcomm Incorporated)
[3]	R3-224925	Other features related to SON_MDT (ZTE)

6 Annex (Support for override protection)

RAN2#115e agreements:

Signaling based logged MDT override protection is applicable in the following scenarios:

1) Signaling based Logged MDT is configured, but no results are available e.g., so far nothing stored, or all previously stored results retrieved

2) Signaling based Logged MDT configuration is stopped (i.e. the expiry of T330), but UE still has un-retrieved results that would be discarded upon accepting a new configuration

From TS 38.331,

2> if the *sigLoggedMeasType* in *VarLogMeasReport* is included:

3> if T330 timer is running and the **logged measurements configuration is for NR**:

4> set *sigLogMeasConfigAvailable* to *true* in the *RRCSetupComplete* message;

3> else:

4> if the UE has **logged measurements available for NR**:

5> set *sigLogMeasConfigAvailable* to *false* in the *RRCSetupComplete* message;

From TS 37.320,

The management-based MDT configuration should not overwrite signalling based MDT configuration in all the single connection scenarios and EN-DC scenario.

To assist the network in preventing management based logged MDT overwriting signaling based logged MDT, if the UE is configured with logged MDT type, the UE will provide an assistance information in RRCSetupComplete / RRCConnectionSetupComplete and RRCResumeComplete / RRCConnectionResumeComplete messages. **The information indicates the signaling based logged MDT configuration presence in the UE.**