3GPP TSG-RAN3 Meeting #109-E R3-205620

E-meeting, 17 – 28 August 2020

Agenda Item: 31.3.5

Source: Ericsson

Title: SoD for MDTinactive

Document for: Discussion, Decision

# Introduction

This is a summary of offline discussions for the topic of CMDT for Inactive UEs. The topic is described in the RAN3-109e agenda as below:

### 31.3.5. MDT for Inactive UEs

*Previous summary of offline disc.: [R3-204308](E:\\3GPP meeting\\RAN3\\109e\\inbox\\新建文件夹\\Docs\\R3-204308.zip) (noted)*

It is confirmed that the principle that “management based MDT should not overwrite signaling based MDT” is valid for all single connection and EN-DC scenarios

Continue discussion on network-based solution as Rel-16 correction

*Possible solutions which have been discussed:*

*1) For Inactive UEs: A solution can be based on, but not limited to, signaling, from old Serving NG RAN node to new Serving NG RAN node, of an indication of an active Signaling Based Logged MDT configuration at the UE*

*2) For Idle UEs: A solution can be based on, but not limited to, signaling, from AMF to new Serving NG RAN node. To be continued...*

The agreements stated above mirror the RAN2 requirements, which state that:

Management based MDT should not overwrite signaling based MDT

Also, the agreements above confirm that RAN3 has agreed to work on a network based solution

Continue discussion on network-based solution as Rel-16 correction

**CB: # 87\_MDTinactive**

**- start from RAN2 requirements**

**- clarify scenario**

**- go for minimum complexity solution; timer-based solution needed?**

(E/// - moderator)

Summary of offline disc [R3-205620](file:///C:\\Users\\eangcen\\Documents\\3GPP_ETSI\\RAN3\\RAN3-109\\MyContributions\\Inbox\\R3-205620.zip)

# For the Chairman’s Notes

Following agreements were proposed on the first round of offline discussion:

# Discussion

## Framing the Requirement

In this CB companies are asked to focus on RAN2’s requirements. As stated above, RAN2’s requirements state that:

Management based MDT should not overwrite signaling based MDT

This requirement comes from the fact that Management Based MDT is a process that can rely on selection of ANY UE, while Signalling based MDT is a process that requests MDT measurement collection from a SPECIFIC UE.

It is worth noticing that Signalling Based MDT may be triggered for law enforcement reasons.

Therefore, while it is of paramount importance that a signalling based logged MDT configuration is not overwritten by a management based MDT configuration, there is no obligation for management based MDT to select any specific UE.

**Observation 1: The main requirement from RAN2 is that Signalilng Based Logged MDT configurations are not overwritten by Management Based Logged MDT configurations**

**Observation 2: A Management Based Logged MDT process can rely on selection of any UE in the MDT area. There is no requirement according to which a UE previously on a Signalling Based MDT configuration should be selected for Management Based Logged MDT**

Based on the above, the requirement RAN3 has to find a solution for is the following:

**Requirement: To determine a network based solution that avoids that signalling based logged MDT configurations are overwritten by management based logged MDT configurations. It is not necessary, i.e. neither RAN2 nor the specifications mandate, that a UE previously on a Signalling Based Logged MDT configuration becomes available for Management Based Logged MDT**

Companies are invited to state their view on the requirement above and to point out at any documented condition that nulls the requirement, if needed.

|  |  |  |
| --- | --- | --- |
| Company | Agree/Don’t Agree | Comments |
| ZTE | agree |  |
| Samsung | Agree | In order to make progress, we think we need to support the minimum requirement and apply this requirement to all scenarios. |
| Huawei | Agree if the agreement applies to RRC\_IDLE, RRC\_INACTIVE, and RRC\_Connected UEs and to all MR-DC cases. | We agree to the agreement that management based MDT should not override signalling based MDT. And such agreements applies to RRC\_IDLE, RRC\_INACTIVE, and RRC\_Connected UEs. Such agreements applies to all MR-DC cases including EN-DC which was clarified by RAN2 by LS. |
| Qualcomm | Agree | Please refer to 3.2 for our detailed viewpoint. |
| CATT | Don’t completely agree | We don't think network based solution should definitely be defined.The issue could be resolved by either Uu based solution or network based solution.We needs to consider the complexity of the two different solutions. Currently, it seems that network based solution is more and more complicated while indication via RRC message is quite simple and straight forward.We propose to LS to RAN2 to ask RAN2 resolve the problem themselves. |
| Ericsson | Agree | As a reply to CATT, the point in this section is purely to agree to the requirement established by RAN2. RAN3 already agreed to work on a network based solution, which is the current status quo. |

Summary of discussions on requirements:

All companies agree that the current requirement is valid:

**Requirement: To determine a network based solution that avoids that signalling based logged MDT configurations are overwritten by management based logged MDT configurations. It is not necessary, i.e. neither RAN2 nor the specifications mandate, that a UE previously on a Signalling Based Logged MDT configuration becomes available for Management Based Logged MDT**

One company does not fully agree with the requirement because it contemplates the option of a UE based solution.

## Possible Solutions

There are two main classes of solutions to address the requirements described above:

**Solution 1:** To provide from Old Serving NG RAN Node or AMF to New Serving NG-RAN Node a per UE indication that a Signalling Based Logged MDT configuration is Pending or Active

* If the configuration is “Pending”, the New Serving NG-RAN Node applies the Signalling Based Logged MDT configuration at the UE and it does not configure the UE with a Management Based Logged MDT configuration.
* If the configuration is “Active”, the New Serving NG-RAN Node does not configure the UE with a Management Based Logged MDT configuration.

In this solution mechanisms to determine when a UE previously on a signalling based logged MDT configuration becomes available for Management Based Logged MDT are left to implementation.   
For example, such mechanisms could be based on timers (after a timer of duration x, consider the UE available for Management Based Logged MDT), or on monitoring of the *logMeasAvailable* IE from the UE (if the UE does not signal the *logMeasAvailable* IE anymore, the UE has terminated its signalling based logging process and it is available for Management Based Logged MDT)

**Solution 2:** To provide from Old Serving NG RAN Node to New Serving NG-RAN Node a per UE indication that a Signalling Based Logged MDT configuration is Pending or Active and to provide an indication of the remaining logging duration, i.e. of the remaining time for which the UE will log signalling based logged MDT measurements.

Such solution can be achieved in various ways, for example, by signalling between old serving RAN node or AMF and new serving NG RAN node the absolute time at which the logging period started as well as an indication of the overall logging duration; or by signalling between old serving RAN node or AMF and new serving NG RAN node the remaining logging duration.

Given that the main requirement given by RAN2 is simply to avoid that signalling based logged MDT configurations are overwritten by management based logged MDT configurations, and given the focus of this CB to “**start from RAN2 requirements**” and “**go for minimum complexity solution**”, the following is proposed:

**Proposal: it is proposed to agree to a solution that allows to provide from Old Serving NG RAN Node or AMF to New Serving NG-RAN Node a per UE indication that a Signalling Based Logged MDT configuration is Pending or Active and to continue discussions on signalling of remaining logging duration as possible optimisation**

Companies are invited to provide their comments to the proposal above. If the proposal is not acceptable, companies are invited to clarify what is missing from the proposal to fulfil the requirements given to RAN3.

|  |  |
| --- | --- |
| Company | Comments |
| ZTE | Not fully understand implementation part of solution 1. (determine when a UE previously on a signalling based logged MDT configuration becomes available for Management Based Logged MDT)  How does RAN node to define the timer x? For example, 120min?  And monitoring of the logMeasAvailable IE from the UE may not always work in case of logged MDT for OOS detection.  Therefore the implementation part make solution1 in sub-optimal and solution 2 is not just optimization on top of solution 1 to solve “Management based MDT should not overwrite signaling based MDT” issue.  Actually , there is no much different in terms of IE impact between two solutions;  For solution 1 , pending/ activation IE for signalling logged MDT configuration,  While for solution 2, remaining duration/absolution time IE for the same configuration.  Therefore,  We prefer solution 2 as start point for the RAN2 requirement to see if any optimization (e.g. signalling simplicity) is needed. |
| Samsung | RAN2 requirement should be applied to all scenarios, including inactive and connected mode. As commented during the meeting, timer solution is needed to fulfil the RAN2 requirement. In order to make progress, we are fine to try the comprised solution. e.g. only configured, not configured status is notified. Timer could be leave to the implementation. The comprised solution from my side is:  **For inactive/Idle mode:**   * In Xn: old node indicates the “Logged MDT indication” to the new node in UE Context retrieval message. This indicator is outside the Trace Active IE. * In NG, the NG-RAN indicates “Logged MDT indication” to the AMF in the UE Context Release Request message and UE Context Release Complete message. * AMF indicates the “Logged MDT indication” to the NG-RAN in the initial UE message. This indicator is outside the Trace Active IE.   **For Connected mode:**  It is also required to insert this indicator in the Xn handover and NG handover procedure. Technically, connected mode UE has the same problem as inactive mode. And RAN2 requirement is for all scenarios. So the same solution should be applied for connected mode UE.  This comprised solution has minimum impact to the signalling and NG-RAN/AMF behaviour, and can ensure the RAN2 requirement. Hope it is acceptable. |
| Huawei | Solution 1 has problem on termination of the signalling based MDT configuration which makes it not a feasible solution.  Either solution 1 or solution 2 should be able to determine when the previous logged MDT configuration in the UE is expired, so that new logged MDT task can be configured to the UE again. Otherwise, that UE may be not configured with logged MDT anymore.  We donot see how solution 1 can determine when the previous logged MDT configuration in the UE is expired. As proposed in [R3-205037](C:\\Users\\z00274494\\AppData\\Local\\Temp\\Rar$DIa0.466\\Docs\\R3-205037.zip), it is propsed to use teh logMeasAvailable indication from the UE.  However, this does not work if the previous logged MDT is configured to log only in case of out of coverage.  In this case, there is a logged MDT still available in the UE, but there is no any logged data in the UE, therefore, the UE will not indicate the logMeasAvailable indication to the network in rrc connection setup.  Therefore, we strongly suggest RAN3 to inform RAN2 about the RAN3 discussion and ask them to confirm if they still prefer network based solutions (3 solutions, one solution per UE state).  If RAN2 still confirms the network based solutions after reviewing RAN3 inputs, we will accept. |
| Qualcomm | We agree with ZTE and prefer solution 2.  While we agree with Proposal 1 that it is not necessary that a UE configured with signalling based MDT becomes available for management based MDT, the network based solution we design should also try to ensure there can be continual MDT reporting from UE for optimization purposes and no gaps in MDT reporting due to inability to configure management based MDT in a new node where UE resumes/reconnects after RRC\_INACTIVE/RRC\_IDLE.  In other words, consider a case where UE resumes from RRC\_INACTIVE in a new NG-RAN node after the expiration of loggedDuration timer. If we consider solution 1, the old NG-RAN node will still signal that there is an active signalling based logged MDT configuration at the UE when it has already expired. As per the moderator’s comments for solution 1, even if we use an implementation based solution of using a timer x after which the new NG-RAN node can consider the UE available for management based MDT, defining the value of timer x without the knowledge of configured loggedDuration timer in source node might lead to gaps in MDT reporting.  Also, regarding the “minimum complexity solution” preference, we believe solution 2 has similar spec impact and complexity as solution 1. Instead of sending a flag, NG-RAN sends the remaining logged MDT duration (the configured timer value is already known to the RAN, it just needs to compute the difference).  Regarding Huawei’s comment on checking with RAN2 again, we would like to stick to a network-based solution and not impact ASN.1 so late into the release when we have evaluated many potential network based solutions (RRC impacts would need including the logged MDT type in the logged MDT configuration and RRCSetupComplete/RRCResumeComplete/ RRCReconfigurationComplete/RRCRestablishmentComplete) |
| CATT | Prefer RAN2 based solution |
| Ericsson | We believe that Solution 1 would be sufficient. As explained, it is not required, nor it is critical that the RAN knows exactly when a Signalling Based Logged MDT configuration has terminated. Management Based Logged MDT is a process that can be applied to any UE, hence there is no performance impact from temporarily excluding some UEs. |

Summary of discussions on solutions:

2 Companies can accept Solution 1

2 Companies can accept Solution 2

2 Companies propose to send an LS to RAN2 to ask whether UE based solutions could be possible. One company opposes sending the LS.

For the sake of progressing we would like to start from R3-205038 and R3-205039 as baselines and move forward.

**Proposal: take R3-205038 and R3-205039 as baseline CRs and achieve a final version fulfilling the requirements established**

# Conclusion, Recommendations [if needed]

If needed