**3GPP TSG- Meeting # *12rev1***

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **32.422** | **CR** |  | **rev** | **-** | **Current version:** | **16.0.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  |
| ***Title:***  | Add MDT trace recording session start and stop mechanism for 5G  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | 5GMDT |  | ***Date:*** | 2020-02-08 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | Add MDT trace recording session start and stop mechanism for 5G  |
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| ***Summary of change:*** | Add trace recording session start and stop mechanism for 5G.  |
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| ***Consequences if not approved:*** | MDT trace recording session start and stop mechanism for 5G would be missing   |
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| ***Clauses affected:*** | 4.2.2.X, 4.2.2.Y, 4.2.2.Z, 4.2.2.Q, 4.2.2.U, 4.2.2.V, 4.X |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

***First change***

#### 4.2.2.X NG-RAN starting mechanisms for management based MDT

A trace recording session of immediate MDT or logged MDT shall be started in the gNB for each selected UE that satisfy the MDT UE selection criteria (i.e. capability condition), provided that a cell trace session for immediate MDT or logged MDT has been activated in the gNB from management system for the given cell(s) before.

The gNB shall configure the corresponding MDT RRC measurements at the selected UE.

When several PLMNs are supported in the RAN for management based MDT, possibly combined with Trace, the gNB shall only select UEs where the pLMNTarget = selectedPLMN-Identity that the UE includes in RRCConnectionSetup message 3GPP TS 38.331 [43].

***Next change***

#### 4.2.3.Y 5GC starting mechanisms for signalling based MDT

There is no starting mechanism in 5GC for signalling based MDT as no trace recording sessions are started for MDT trace sessions in AMF.

***Next change***

#### 4.2.3.Z NG-RAN starting mechanisms for signalling based MDT

A trace recording session of either immediate or logged MDT shall be started in the gNB for a given UE when a trace session activation request is received from the AMF for the UE and the MDT UE selection conditions are satisfied for the UE. The gNB shall configure the corresponding MDT RRC measurements at the UE. If selection conditions are not satisfied, the gNB shall store the trace control and configuration parameters and forward these parameters when the UE handovers to other gNBs over Xn or N2.

If the gNB receives a signalling based MDT activation request when the UE is served by a cell that is in the gNB but not in the MDT area scope then the gNB shall store the MDT configuration and configure the UE when the UE moves to a cell in the gNB (intra gNB handover) that satisfies the area scope in the request.

***Next change***

#### 4.2.4.Q NG-RAN stopping mechanisms for management based MDT

In case of immediate MDT, the gNB shall stop a trace recording session for a given UE when the UE changes cell or goes to idle mode or inactive state or when the cell trace session is deactivated at the gNB from its NG-RAN management system The gNB shall deactivate the corresponding MDT RRC measurements in the UE.

In case of logged MDT, there is no stopping mechanism in the gNB. The gNB does not need to maintain a logged MDT, trace recording session once it has been configured in the UE.

***Next change***

#### 4.2.5.U 5GC stopping mechanisms for signalling based MDT

There is no stopping mechanism in the 5GC for MDT trace recording sessions, see clause 4.2.3.Y.

***Next change***

#### 4.2.5.V NG-RAN stopping mechanisms for signalling based MDT

In case of immediate MDT, the gNB shall stop an ongoing trace recording session for a given UE when a trace session deactivation is received from the AMF. The gNB shall deactivate the corresponding MDT measurements in the UE.

If the configured area scope is not satisfied in the target cell after a handover, the gNB may deactivate the Immediate MDT configured to the UE like explained in clause 4.4.

In case of logged MDT, there is no stopping mechanism in the gNB. The gNB does not need to maintain a logged MDT trace recording session once it has been configured in the UE.

***Next change***

## 4.X Handling of MDT Trace sessions at handover for immediate MDT in NG-RAN

The gNB shall activate the Immediate MDT in the UE if the area based selection conditions are satisfied or not in the target cell after a handover that is made over Xn or N2. If the area based selection conditions are not satisfied in the handover target cell, the gNB may deactivate the Immediate MDT in the UE. The trace sessions and trace recording sessions are not visible for the UE.

In case of signalling based trace activation (subscription based MDT), the gNB shall propagate the Trace Session parameters together with the MDT specific parameters to the target cell regardless of whether the source or target cell is part of the configured area scope in case of an Intra-PLMN handover over Xn or N2.

For NG-RAN, the MDT configuration received by signalling based trace messages for a specific UE will propagate during intra-PLMN handover and may propagate during inter-PLMN handover if the Signalling Based MDT PLMN List is available and includes the target PLMN. This behaviour applies also for MDT configuration that includes area scope, regardless of whether the source or target cell is part of the configured area scope.

For signalling based MDT configuration (i.e. subscription based MDT), when a UE that has been configured with MDT hands over to another gNB (i.e. in connected mode) and the Signalling Based MDT PLMN List conditions mentioned above are satisfied:

- with an Xn handover: the MDT configuration shall be passed to the gNB in the Xn handover request for continuity of MDT data collection. The new gNB shall stop the MDT collection if the new conditions are not within the criteria for MDT data collection.

- with an N2 handover and with no AMF relocation: with N2 handover the AMF shall ensure the MDT configuration is sent to the new gNB.

- with an N2 handover and with AMF relocation: MDT configuration shall be passed on to the new AMF on AMF relocation. During inter-AMF handover, the AMF shall propagate the MDT configuration parameters to the target AMF within an N14- Forward Relocation Request message as part of inter-AMF handover procedures. The new AMF shall save the information as part of the UE context and forward the MDT configuration to the new gNB.

The following MDT configuration shall be passed during handovers (Either intra-gNB, inter-gNB or inter-AMF HO):

- Trace Session Reference

- Trace Recording Session Reference

- Area scope

- List of measurements

- Report Amount

- Reporting Trigger

- Event Threshold

- Report Interval

- IP address of TCE

- Job type

- Measurement period LTE/NR (if either of the measurements M4, M5 is requested)

- Positioning method

- Collection period for RRM measurements NR (present only if any of M2 or M3 measurements are requested)

- MDT PLMN List

Note that at the same time not all the parameters can be present. The conditions are described in clause 5.10 of the present document.

***End of changes***