**3GPP TSG-RAN3 Meeting #109-e *R3-205597***

**E-meeting, 17 - 28 August 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.413** | **CR** | **0443** | **rev** | **1** | **Current version:** | **16.2.0** |  |
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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:*** | Failure case of user location report | | | | | | | | | |
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| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | RAN3 | | | | | | | | | |
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| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2020-08-05 |
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| ***Category:*** | **A** |  | | | | | ***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 can be 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:*** | | The *Location Reporting Request Type* IE is included in the INITIAL CONTEXT SETUP REQUEST message and HANDOVER REQUEST message. If the location report request type contains multiple areas of interest set with the same Location Reporting Reference ID, or some other reasons, the NG-RAN can not perform the location report, and need to inform the AMF.  However it is not clear which option the NG-RAN shall perform:   * **Option1**: fail the initial UE context setup or handover procedure with failure response. * **Option 2**: succeed the initial UE context setup or handover procedure. Then the NG-RAN sends a LOCATION REPORTING FAILURE INDICATION message to the AMF with a cause value. * **Option 3:** introduce a new indicator in the successful response message to inform AMF (new IE is needed), but not fail the procedures.   Option 2 is preferable. But currently the Location Reporting Failure Indication is used on in case of the Location Reporting Control Procedure as follows.   * *The purpose of the Location Reporting Failure Indication procedure is to allow the NG-RAN node to inform the AMF that the Location Reporting Control procedure has failed. The procedure uses UE-associated signalling.*   Hence it is proposed to update the purpose of the Location Reporting Failure Indication procedure. | | | | | | | | |
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| ***Summary of change:*** | | Update the purpose of the Location Reporting Failure Indication procedure to allow the NG-RAN to report in case that the requested location reporting action has failed, so as to cover all location reporting failure cases    Impact Analysis:  Impact assessment towards the previous version of the specification (same release):  This CR has isolated impact with the previous version of the specification (same release) because it corrects the NG-RAN behaviour when it is not able to perform the location report signalled in the INITIAL CONTEXT SETUP REQUEST message and HANDOVER REQUEST message.  The impact can be considered isolated. | | | | | | | | |
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| ***Consequences if not approved:*** | | It is ambiguous for the NG-RAN operation when the NG-RAN can not perform the location report signalled in the INITIAL CONTEXT SETUP REQUEST message and HANDOVER REQUEST message. | | | | | | | | |
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| ***Clauses affected:*** | | 8.12.1, 8.12.2 | | | | | | | | |
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|  | | **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:*** | | Rev0: submitted as R3-205075  Rev1: R3-205597  Update based on online comments. | | | | | | | | |

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| **Change begins** |

## 8.12 Location Reporting Procedures

### 8.12.1 Location Reporting Control

#### 8.12.1.1 General

The purpose of the Location Reporting Control procedure is to allow the AMF to request the NG-RAN node to report the UE's current location, or the UE's last known location with time stamp, or the UE's presence in the area of interest while in CM-CONNECTED state as specified in TS 23.501 [9] and TS 23.502 [10]. The procedure uses UE-associated signalling.

#### 8.12.1.2 Successful Operation



Figure 8.12.1.2-1: Location reporting control

The AMF initiates the procedure by sending a LOCATION REPORTING CONTROL message to the NG-RAN node. On receipt of the LOCATION REPORTING CONTROL message the NG-RAN node shall perform the requested location reporting control action for the UE.

The *Location Reporting Request Type* IE indicates to the NG-RAN node whether:

- to report directly;

- to report upon change of serving cell;

- to report UE presence in the area of interest;

- to stop reporting at change of serving cell;

- to stop reporting UE presence in the area of interest;

- to cancel location reporting for the UE.

If the *Area Of Interest List* IE is included in the *Location Reporting Request Type* IE in the LOCATION REPORTING CONTROL message, the NG-RAN node shall store this information and use it to track the UE's presence in the area of interest as defined in TS 23.502 [10].

If the *Additional Location Information* IE is included in the LOCATION REPORTING CONTROL message and set to "Include PSCell” then, if Dual Connectivity is activated, the NG-RAN node shall include the current PSCell in the report. If a report upon change of serving cell is requested, the NG-RAN node shall provide the report also whenever the UE changes the PSCell, and when Dual Connectivity is activated.

If reporting upon change of serving cell is requested, the NG-RAN node shall send a report immediately and shall send a report whenever the UE’s location changes.

#### 8.12.1.3 Abnormal Conditions

**Interactions with the Location Reporting Failure Indication procedure:**

If the NG-RAN node receives a LOCATION REPORTING CONTROL message containing several *Location Reporting Reference ID* IE set to the same value, the NG-RAN node shall send the LOCATION REPORTING FAILURE INDICATION message with an appropriate cause value.

### 8.12.2 Location Reporting Failure Indication

#### 8.12.2.1 General

The purpose of the Location Reporting Failure Indication procedure is to allow the NG-RAN node to inform the AMF that the location reporting request contained in the Location Reporting Control procedure, the Handover Resource Allocation procedure or the Initial Context Setup procedure has failed. The procedure uses UE-associated signalling.

#### 8.12.2.2 Successful Operation



Figure 8.12.2.2-1: Location reporting failure indication

The NG-RAN node initiates the procedure by sending a LOCATION REPORTING FAILURE INDICATION message to the AMF. Upon reception of the LOCATION REPORTING FAILURE INDICATION message the AMF shall, based on the failure reason indicated by the *Cause* IE, take appropriate action.

#### 8.12.2.3 Abnormal Conditions

Void.

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| **Change ends** |