**3GPP TSG-RAN WG3 Meeting #115-e *R3-222547***

**E-meeting, 21 Feb – 3 Mar 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **37.340** | **CR** |  | **rev** | **3** | **Current version:** | **16.8.0** |  |
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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 |  |

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| ***Title:***  | On UE security capability to address SA3 request [UE\_Sec\_Caps] |
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| ***Source to WG:*** | Huawei, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | R3 |
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| ***Work item code:*** | TEI17 |  | ***Date:*** | 2022-02-21 |
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| ***Category:*** | **C** |  | ***Release:*** | Rel-17 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | In the LS S3-213272, it is described that from release 17 onwards: * *SA3 asks RAN3 to modify their specifications to ensure that MME, eNB, AMF and ng-RAN node all pass on the complete UE security capabilities as discussed above.*

It also mentioned that the following stage text (from clause 7.2.4.2.1 of TS 33.401) indicated that the full UE security capabilities were available at the RAN nodes. * *When AS security context is established in the eNB, the MME shall send the UE EPS security capabilities to the eNB.*
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| ***Summary of change:*** | Add descriptions so that the MN sends the complete UE security capabilities (including all EUTRA/NR bits received previously) to the SN.  |
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| ***Consequences if not approved:*** | It seems not aligned with SA3 descriptions on the UE security capability.  |
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| ***Clauses affected:*** | 9 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS36.413 CR 1835, TS36.423 CR 1624, TS38.413 CR 0669, TS 38.423 CR 0676 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** | Rev0: R3-215586Rev1: R3-216095 Update the procedure text based on the online commentsRev2: R3-221630 Resubmit to RAN3-115-e. Rev3: R3-222547 Update the cover page, and minor update texts for EN-DC.  |

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| **Change Begins** |

# 9 Security related aspects

MR-DC can only be configured after security activation in the MN.

In EN-DC and NGEN-DC, for bearers terminated in the MN the network configures the UE with KeNB; for bearers terminated in the SN the network configures the UE with S-KgNB. In NE-DC, for bearers terminated in the MN the network configures the UE with KgNB; for bearers terminated in the SN the network configures the UE with S-KeNB. In NR-DC, for bearers terminated in the MN the network configures the UE with KgNB; for bearers terminated in the SN the network configures the UE with S-KgNB.

In NE-DC and NR-DC, a PCell change without KgNB change does not require a S-KeNB change (NE-DC case) or a S-KgNB change (NR-DC case).

In EN-DC, NGEN-DC and NR-DC, for a PSCell change that does not require a KeNB change (i.e. no simultaneous PCell handover in EN-DC and NGEN-DC) or a KgNB change (in NR-DC), S-KgNB key refresh is not required if the PDCP termination point of the SN is not changed. In NE-DC, a PSCell change always requires a S-KeNB change.

In EN-DC, the UE supports the NR security algorithms corresponding to the E-UTRA security algorithms signalled at NAS level and the UE NR AS Security capability is not signalled to the MN over RRC. Mapping from E-UTRA security algorithms to the corresponding NR security algorithms, where necessary, is performed at the MN. The MN sends the complete UE security capabilities including all security capability bits previously received (after mapping, where necessary) to the SN.

For MR-DC with 5GC, UP integrity protection can be configured on a per radio bearer basis. All DRBs which belong to the same PDU session always have the same UP integrity protection activation, i.e., either on or off:

- For NR-DC: MN and/or SN terminated DRBs of a PDU session can have UP integrity protection activation either on or off. A UE configured to operate in NR-DC shall support integrity protection for all DRBs (MN and SN terminated) at any data rate, up to and including the highest data rate supported by the UE for both UL and DL (see TS 38.300 [3]).

- For NE-DC: MN terminated DRBs of a PDU session can have UP integrity protection activation on; however, in this case, the MN will not at any point offload any DRB of such PDU session to the SN. A UE configured to operate in NE-DC shall support integrity protection for all MN terminated DRBs at any data rate, up to and including the highest data rate supported by the UE's radio access capabilities for both UL and DL (see TS 38.300 [3]). SN terminated DRBs of a PDU session always have UP integrity protection activation off.

- For NGEN-DC: Both MN terminated and SN terminated DRBs of a PDU session always have UP integrity protection activation off.

In MR-DC with 5GC, the MN sends the complete UE security capabilities to the SN including all NR and E-UTRA security capability bits previously received by the MN from the Core Network or from another NG-RAN node as specified in TS 38.300 [3].

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| **Change Ends** |