**3GPP TSG-RAN WG2 Meeting #121-bise *R2-230xxxx***

**Electronic, 18th – 26th Apr, 2023**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  |
| *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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|  |  |  |  |  |  |  |  |  |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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|  |
| ***Title:***  | UE capabilities for Rel-18 NCR |
|  |  |
| ***Source to WG:*** | Intel Corporation |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_NetConRepeater |  | ***Date:*** | 2023-04-05 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-18 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | Introduction of Rel-18 NCR related capabilities |
|  |  |
| ***Summary of change:*** | 1. RAN2 #120 agreement on optional DRB:

 NCR-MT indicates the maximum number of supported DRB in UE capability, values {1, 16}. If absent, the NCR-MT does not support DRB.1. RAN2 #121 agreement on RRC state:
* RRC\_INACTIVE is optionally supported without any specific enhancements.
1. Agreeable proposals in [Post121][702][NCR] Capabilities running CR for NCR
 |
|  |  |
| ***Consequences if not approved:*** | Rel-18 NCR feature is not completed |
|  |  |
| ***Clauses affected:*** |  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **x** |  |  Other core specifications  | TS/TR 38.306 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:*** |  |

### 6.3.3 UE capability information elements

**<\*\*\* OMITTED TEXT \*\*\*\*>**

#### *NCR-Parameters*

The IE *NCR-Parameters* is used to indicate the UE capabilities supported by NCR-MT.

*NCR-Parameters* information element

-- ASN1START

-- TAG-NCR-PARAMETERS-START

NCR-Parameters-r18::= SEQUENCE {

 inactiveState-NCR-r18 ENUMERATED {supported} OPTIONAL,

 supportedNumberOfDRBs-NCR-r18 ENUMERATED {n1,n16} OPTIONAL,

 non-DRB-NCR-r18 ENUMERATED {supported} OPTIONAL

}

-- TAG-NCR-PARAMETERS-STOP

-- ASN1STOP

***End of the modified section***

***2nd. Modified section***

#### – *PDCP-Parameters*

The IE *PDCP-Parameters* is used to convey capabilities related to PDCP.

***PDCP-Parameters* information element**

-- ASN1START

-- TAG-PDCP-PARAMETERS-START

PDCP-Parameters ::= SEQUENCE {

 supportedROHC-Profiles SEQUENCE {

 profile0x0000 BOOLEAN,

 profile0x0001 BOOLEAN,

 profile0x0002 BOOLEAN,

 profile0x0003 BOOLEAN,

 profile0x0004 BOOLEAN,

 profile0x0006 BOOLEAN,

 profile0x0101 BOOLEAN,

 profile0x0102 BOOLEAN,

 profile0x0103 BOOLEAN,

 profile0x0104 BOOLEAN

 },

 maxNumberROHC-ContextSessions ENUMERATED {cs2, cs4, cs8, cs12, cs16, cs24, cs32, cs48, cs64,

 cs128, cs256, cs512, cs1024, cs16384, spare2, spare1},

 uplinkOnlyROHC-Profiles ENUMERATED {supported} OPTIONAL,

 continueROHC-Context ENUMERATED {supported} OPTIONAL,

 outOfOrderDelivery ENUMERATED {supported} OPTIONAL,

 shortSN ENUMERATED {supported} OPTIONAL,

 pdcp-DuplicationSRB ENUMERATED {supported} OPTIONAL,

 pdcp-DuplicationMCG-OrSCG-DRB ENUMERATED {supported} OPTIONAL,

 ...,

 [[

 drb-IAB-r16 ENUMERATED {supported} OPTIONAL,

 non-DRB-IAB-r16 ENUMERATED {supported} OPTIONAL,

 extendedDiscardTimer-r16 ENUMERATED {supported} OPTIONAL,

 continueEHC-Context-r16 ENUMERATED {supported} OPTIONAL,

 ehc-r16 ENUMERATED {supported} OPTIONAL,

 maxNumberEHC-Contexts-r16 ENUMERATED {cs2, cs4, cs8, cs16, cs32, cs64, cs128, cs256, cs512,

 cs1024, cs2048, cs4096, cs8192, cs16384, cs32768, cs65536} OPTIONAL,

 jointEHC-ROHC-Config-r16 ENUMERATED {supported} OPTIONAL,

 pdcp-DuplicationMoreThanTwoRLC-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 longSN-RedCap-r17 ENUMERATED {supported} OPTIONAL,

 udc-r17 SEQUENCE {

 standardDictionary-r17 ENUMERATED {supported} OPTIONAL,

 operatorDictionary-r17 SEQUENCE {

 versionOfDictionary-r17 INTEGER (0..15),

 associatedPLMN-ID-r17 PLMN-Identity

 } OPTIONAL,

 continueUDC-r17 ENUMERATED {supported} OPTIONAL,

 supportOfBufferSize-r17 ENUMERATED {kbyte4, kbyte8} OPTIONAL

 } OPTIONAL

]],

[[

longSN-NCR-r18 ENUMERATED {supported} OPTIONAL

]]

}

-- TAG-PDCP-PARAMETERS-STOP

-- ASN1STOP

***End of the modified section***

***3rd. Modified section***

– *RLC-Parameters*

The IE *RLC-Parameters* is used to convey capabilities related to RLC.

***RLC-Parameters* information element**

-- ASN1START

-- TAG-RLC-PARAMETERS-START

RLC-Parameters ::= SEQUENCE {

 am-WithShortSN ENUMERATED {supported} OPTIONAL,

 um-WithShortSN ENUMERATED {supported} OPTIONAL,

 um-WithLongSN ENUMERATED {supported} OPTIONAL,

 ...,

 [[

 extendedT-PollRetransmit-r16 ENUMERATED {supported} OPTIONAL,

 extendedT-StatusProhibit-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 am-WithLongSN-RedCap-r17 ENUMERATED {supported} OPTIONAL

]],

[[

am-WithLongSN-NCR-r18 ENUMERATED {supported} OPTIONAL

]]

}

-- TAG-RLC-PARAMETERS-STOP

-- ASN1STOP

– *SDAP-Parameters*

The IE *SDAP-Parameters* is used to convey capabilities related to SDAP.

***SDAP-Parameters* information element**

-- ASN1START

-- TAG-SDAP-PARAMETERS-START

SDAP-Parameters ::= SEQUENCE {

 as-ReflectiveQoS ENUMERATED {true} OPTIONAL,

 ...,

 [[

 sdap-QOS-IAB-r16 ENUMERATED {supported} OPTIONAL,

 sdapHeaderIAB-r16 ENUMERATED {supported} OPTIONAL

]],

[[

sdap-QOS-NCR-r18 ENUMERATED {supported} OPTIONAL,

sdapHeader-NCR-r18 ENUMERATED {supported} OPTIONAL

]]

}

-- TAG-SDAP-PARAMETERS-STOP

-- ASN1STOP

***End of the modified section***

***4th. Modified section***

#### *UE-NR-Capability*

The IE *UE-NR-Capability* is used to convey the NR UE Radio Access Capability Parameters, see TS 38.306 [26].

***UE-NR-Capability* information element**

-- ASN1START

-- TAG-UE-NR-CAPABILITY-START

UE-NR-Capability ::= SEQUENCE {

 accessStratumRelease AccessStratumRelease,

 pdcp-Parameters PDCP-Parameters,

 rlc-Parameters RLC-Parameters OPTIONAL,

 mac-Parameters MAC-Parameters OPTIONAL,

 phy-Parameters Phy-Parameters,

 rf-Parameters RF-Parameters,

 measAndMobParameters MeasAndMobParameters OPTIONAL,

 fdd-Add-UE-NR-Capabilities UE-NR-CapabilityAddXDD-Mode OPTIONAL,

 tdd-Add-UE-NR-Capabilities UE-NR-CapabilityAddXDD-Mode OPTIONAL,

 fr1-Add-UE-NR-Capabilities UE-NR-CapabilityAddFRX-Mode OPTIONAL,

 fr2-Add-UE-NR-Capabilities UE-NR-CapabilityAddFRX-Mode OPTIONAL,

 featureSets FeatureSets OPTIONAL,

 featureSetCombinations SEQUENCE (SIZE (1..maxFeatureSetCombinations)) OF FeatureSetCombination OPTIONAL,

 lateNonCriticalExtension OCTET STRING (CONTAINING UE-NR-Capability-v15c0) OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1530 OPTIONAL

}

-- Regular non-critical Rel-15 extensions:

UE-NR-Capability-v1530 ::= SEQUENCE {

 fdd-Add-UE-NR-Capabilities-v1530 UE-NR-CapabilityAddXDD-Mode-v1530 OPTIONAL,

 tdd-Add-UE-NR-Capabilities-v1530 UE-NR-CapabilityAddXDD-Mode-v1530 OPTIONAL,

 dummy ENUMERATED {supported} OPTIONAL,

 interRAT-Parameters InterRAT-Parameters OPTIONAL,

 inactiveState ENUMERATED {supported} OPTIONAL,

 delayBudgetReporting ENUMERATED {supported} OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1540 OPTIONAL

}

UE-NR-Capability-v1540 ::= SEQUENCE {

 sdap-Parameters SDAP-Parameters OPTIONAL,

 overheatingInd ENUMERATED {supported} OPTIONAL,

 ims-Parameters IMS-Parameters OPTIONAL,

 fr1-Add-UE-NR-Capabilities-v1540 UE-NR-CapabilityAddFRX-Mode-v1540 OPTIONAL,

 fr2-Add-UE-NR-Capabilities-v1540 UE-NR-CapabilityAddFRX-Mode-v1540 OPTIONAL,

 fr1-fr2-Add-UE-NR-Capabilities UE-NR-CapabilityAddFRX-Mode OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1550 OPTIONAL

}

UE-NR-Capability-v1550 ::= SEQUENCE {

 reducedCP-Latency ENUMERATED {supported} OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1560 OPTIONAL

}

UE-NR-Capability-v1560 ::= SEQUENCE {

 nrdc-Parameters NRDC-Parameters OPTIONAL,

 receivedFilters OCTET STRING (CONTAINING UECapabilityEnquiry-v1560-IEs) OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1570 OPTIONAL

}

UE-NR-Capability-v1570 ::= SEQUENCE {

 nrdc-Parameters-v1570 NRDC-Parameters-v1570 OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1610 OPTIONAL

}

-- Late non-critical Rel-15 extensions:

UE-NR-Capability-v15c0 ::= SEQUENCE {

 nrdc-Parameters-v15c0 NRDC-Parameters-v15c0 OPTIONAL,

 partialFR2-FallbackRX-Req ENUMERATED {true} OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v15g0 OPTIONAL

}

UE-NR-Capability-v15g0 ::= SEQUENCE {

 rf-Parameters-v15g0 RF-Parameters-v15g0 OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v15j0 OPTIONAL

}

UE-NR-Capability-v15j0 ::= SEQUENCE {

 -- Following field is only for REL-15 late non-critical extensions

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v16a0 OPTIONAL

}

-- Regular non-critical Rel-16 extensions:

UE-NR-Capability-v1610 ::= SEQUENCE {

 inDeviceCoexInd-r16 ENUMERATED {supported} OPTIONAL,

 dl-DedicatedMessageSegmentation-r16 ENUMERATED {supported} OPTIONAL,

 nrdc-Parameters-v1610 NRDC-Parameters-v1610 OPTIONAL,

 powSav-Parameters-r16 PowSav-Parameters-r16 OPTIONAL,

 fr1-Add-UE-NR-Capabilities-v1610 UE-NR-CapabilityAddFRX-Mode-v1610 OPTIONAL,

 fr2-Add-UE-NR-Capabilities-v1610 UE-NR-CapabilityAddFRX-Mode-v1610 OPTIONAL,

 bh-RLF-Indication-r16 ENUMERATED {supported} OPTIONAL,

 directSN-AdditionFirstRRC-IAB-r16 ENUMERATED {supported} OPTIONAL,

 bap-Parameters-r16 BAP-Parameters-r16 OPTIONAL,

 referenceTimeProvision-r16 ENUMERATED {supported} OPTIONAL,

 sidelinkParameters-r16 SidelinkParameters-r16 OPTIONAL,

 highSpeedParameters-r16 HighSpeedParameters-r16 OPTIONAL,

 mac-Parameters-v1610 MAC-Parameters-v1610 OPTIONAL,

 mcgRLF-RecoveryViaSCG-r16 ENUMERATED {supported} OPTIONAL,

 resumeWithStoredMCG-SCells-r16 ENUMERATED {supported} OPTIONAL,

 resumeWithStoredSCG-r16 ENUMERATED {supported} OPTIONAL,

 resumeWithSCG-Config-r16 ENUMERATED {supported} OPTIONAL,

 ue-BasedPerfMeas-Parameters-r16 UE-BasedPerfMeas-Parameters-r16 OPTIONAL,

 son-Parameters-r16 SON-Parameters-r16 OPTIONAL,

 onDemandSIB-Connected-r16 ENUMERATED {supported} OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1640 OPTIONAL

}

UE-NR-Capability-v1640 ::= SEQUENCE {

 redirectAtResumeByNAS-r16 ENUMERATED {supported} OPTIONAL,

 phy-ParametersSharedSpectrumChAccess-r16 Phy-ParametersSharedSpectrumChAccess-r16 OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1650 OPTIONAL

}

UE-NR-Capability-v1650 ::= SEQUENCE {

 mpsPriorityIndication-r16 ENUMERATED {supported} OPTIONAL,

 highSpeedParameters-v1650 HighSpeedParameters-v1650 OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1690 OPTIONAL

}

UE-NR-Capability-v1690 ::= SEQUENCE {

 ul-RRC-Segmentation-r16 ENUMERATED {supported} OPTIONAL,

 nonCriticalExtension UE-NR-Capability-v1700 OPTIONAL

}

-- Late non-critical extensions from Rel-16 onwards:

UE-NR-Capability-v16a0 ::= SEQUENCE {

 phy-Parameters-v16a0 Phy-Parameters-v16a0 OPTIONAL,

 rf-Parameters-v16a0 RF-Parameters-v16a0 OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non-critical Rel-17 extensions:

UE-NR-Capability-v1700 ::= SEQUENCE {

 inactiveStatePO-Determination-r17 ENUMERATED {supported} OPTIONAL,

 highSpeedParameters-v1700 HighSpeedParameters-v1700 OPTIONAL,

 powSav-Parameters-v1700 PowSav-Parameters-v1700 OPTIONAL,

 mac-Parameters-v1700 MAC-Parameters-v1700 OPTIONAL,

 ims-Parameters-v1700 IMS-Parameters-v1700 OPTIONAL,

 measAndMobParameters-v1700 MeasAndMobParameters-v1700,

 appLayerMeasParameters-r17 AppLayerMeasParameters-r17 OPTIONAL,

 redCapParameters-r17 RedCapParameters-r17 OPTIONAL,

 ra-SDT-r17 ENUMERATED {supported} OPTIONAL,

 srb-SDT-r17 ENUMERATED {supported} OPTIONAL,

 gNB-SideRTT-BasedPDC-r17 ENUMERATED {supported} OPTIONAL,

 bh-RLF-DetectionRecovery-Indication-r17 ENUMERATED {supported} OPTIONAL,

 nrdc-Parameters-v1700 NRDC-Parameters-v1700 OPTIONAL,

 bap-Parameters-v1700 BAP-Parameters-v1700 OPTIONAL,

 musim-GapPreference-r17 ENUMERATED {supported} OPTIONAL,

 musimLeaveConnected-r17 ENUMERATED {supported} OPTIONAL,

 mbs-Parameters-r17 MBS-Parameters-r17,

 nonTerrestrialNetwork-r17 ENUMERATED {supported} OPTIONAL,

 ntn-ScenarioSupport-r17 ENUMERATED {gso, ngso} OPTIONAL,

 sliceInfoforCellReselection-r17 ENUMERATED {supported} OPTIONAL,

 ue-RadioPagingInfo-r17 UE-RadioPagingInfo-r17 OPTIONAL,

 -- R4 17-2 UL gap pattern for Tx power management

 ul-GapFR2-Pattern-r17 BIT STRING (SIZE (4)) OPTIONAL,

 ntn-Parameters-r17 NTN-Parameters-r17 OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

UE-NR-Capability-v1800 ::= SEQIENCE {

 ncr-Parameters-r18 NCR-Parameters-r18 OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

UE-NR-CapabilityAddXDD-Mode ::= SEQUENCE {

 phy-ParametersXDD-Diff Phy-ParametersXDD-Diff OPTIONAL,

 mac-ParametersXDD-Diff MAC-ParametersXDD-Diff OPTIONAL,

 measAndMobParametersXDD-Diff MeasAndMobParametersXDD-Diff OPTIONAL

}

UE-NR-CapabilityAddXDD-Mode-v1530 ::= SEQUENCE {

 eutra-ParametersXDD-Diff EUTRA-ParametersXDD-Diff

}

UE-NR-CapabilityAddFRX-Mode ::= SEQUENCE {

 phy-ParametersFRX-Diff Phy-ParametersFRX-Diff OPTIONAL,

 measAndMobParametersFRX-Diff MeasAndMobParametersFRX-Diff OPTIONAL

}

UE-NR-CapabilityAddFRX-Mode-v1540 ::= SEQUENCE {

 ims-ParametersFRX-Diff IMS-ParametersFRX-Diff OPTIONAL

}

UE-NR-CapabilityAddFRX-Mode-v1610 ::= SEQUENCE {

 powSav-ParametersFRX-Diff-r16 PowSav-ParametersFRX-Diff-r16 OPTIONAL,

 mac-ParametersFRX-Diff-r16 MAC-ParametersFRX-Diff-r16 OPTIONAL

}

BAP-Parameters-r16 ::= SEQUENCE {

 flowControlBH-RLC-ChannelBased-r16 ENUMERATED {supported} OPTIONAL,

 flowControlRouting-ID-Based-r16 ENUMERATED {supported} OPTIONAL

}

BAP-Parameters-v1700 ::= SEQUENCE {

 bapHeaderRewriting-Rerouting-r17 ENUMERATED {supported} OPTIONAL,

 bapHeaderRewriting-Routing-r17 ENUMERATED {supported} OPTIONAL

}

MBS-Parameters-r17 ::= SEQUENCE {

 maxMRB-Add-r17 INTEGER (1..16) OPTIONAL

}

-- TAG-UE-NR-CAPABILITY-STOP

-- ASN1STOP

|  |
| --- |
| ***UE-NR-Capability* field descriptions** |
| ***featureSetCombinations***A list of *FeatureSetCombination:s* for *supportedBandCombinationList* in *UE-NR-Capability*. The *FeatureSetDownlink:s* and *FeatureSetUplink:s* referred to from these *FeatureSetCombination:s* are defined in the *featureSets* list in *UE-NR-Capability*. |

|  |
| --- |
| ***UE-NR-Capability-v1540 field descriptions*** |
| ***fr1-fr2-Add-UE-NR-Capabilities***This instance of *UE-NR-CapabilityAddFRX-Mode* does not include any other fields than *csi-RS-IM-ReceptionForFeedback*/ *csi-RS-ProcFrameworkForSRS*/ *csi-ReportFramework*. |

***End of the modified section***