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

**Electronic, 17th – 26th Apr, 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***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 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-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 {

inactiveStateNCR-r18 ENUMERATED {supported} OPTIONAL,

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

nonDRB-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,

sdap-HeaderNCR-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***