**3GPP TSG-RAN WG2 Meeting #116-e *R2-211xxxx***

**Online,** **1st – 12th November, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.331** | **CR** | **draft** | **rev** | **-** | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *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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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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| ***Title:*** | Introduction of CPA and inter-SN CPC | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CATT | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_NR\_DC\_enh2-Core | | | | |  | ***Date:*** | | | 2021-11-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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 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:*** | | Considering on CPA and inter-SN CPC, the following agreements have been made. This CR is to capture the agreements for CPAC for introduction of CPA and inter-SN CPC in TS 36.331.   |  | | --- | | **Agreements**  **Set 1A: general/procedure**   1. Maintain Rel-15 principle that only one PScell is active at a time even with conditional PScell addition/change. 2. Usage of CPAC is decided by the network. The UE evaluates when the condition is valid. 3. The baseline operation for CPAC procedure assumes the RRC Reconfiguration message contains SCG addition/change triggering condition(s) and the RRC configuration(s) for candidate target PSCells. The UE accesses the prepared PSCell when the relevant condition is met. 4. CPAC execution condition and/or candidate PSCell configuration can be updated by modifying the existing CPAC configuration. 5. Support configuration of one or more candidate cells for CPAC. 6. UE is not required to continue evaluating the triggering condition of other candidate PSCell(s) during CPC/CPA execution. 7. For FR1 and FR2, leave it up to UE implementation to select the candidate PSCell if more than one candidate cell meets the triggering condition. UE may consider beam information in this. 8. No additional optimizations with multi-beam operation are introduced to improve RACH performance for CPAC completion with multi-beam operation.   **Set 1B: trigger/ condition related**   1. For conditional PSCell addition, the MN decides on the conditional PSCell addition execution condition. FFS for PSCell Change. 2. The execution condition for CPAC is defined by a measurement identity which identifies a measurement configuration. 3. For conditional PSCell change, A3/A5 execution condition should be supported while for conditional PSCell addition, A4/B1 like execution condition should be supported. 4. Allow having multiple triggering conditions (using “and”) for CPAC execution of a single candidate cell. Only single RS type per CPAC candidate is supported. At most two triggering quantities (e.g. RSRP and RSRQ, RSRP and SINR, etc.) can be configured simultaneously. 5. Cell level quality is used as baseline for CPAC execution condition; 6. Only single RS type (SSB or CSI-RS) per candidate PSCell is supported for PSCell change. 7. TTT is supported for CPAC execution condition (as per legacy configuration)   **Set 1C: signalling related**   1. Reuse the RRCReconfiguration/RRCConnectionReconfiguration procedure to signal CPAC configuration to UE following Rel-16 signalling. 2. Multiple candidate PSCells can be sent in either one or multiple RRC messages. 3. As part of the CPAC configuration to be sent to the UE, the RRC container is used to carry candidate PSCell configuration, and the MN is not allowed to alter any content of the configuration from the PSCell. Moreover, in case of SN change, source SN is not allowed to alter any content of the configuration from the target SN. FFS on which RRC format is used (can be considered in stage-3) 4. For conditional PSCell addition, the MN transmits the final RRCReconfiguration/ RRCConnectionReconfiguration message to the UE. **FFS how the encapsulation is done exactly (can be considered in Stage-3).**   **Agreements**   * In MN initiated inter-SN CPC and CPA, the MN is not required to indicate the execution condition(s) to other involved entities (e.g. target SN, source SN). * For CPA and MN initiated Inter-SN CPC, the MN generates and transmits the conditional configuration message (i.e. RRCReconfiguration/RRCConnectionReconfiguration message) to the UE. The RRCReconfiguration provided by the candidate PSCell(s) is encapsulated in the final conditional reconfiguration message to the UE. The MN is not allowed to alter the RRCReconfiguration provided by the candidate PSCell(s).   **Agreements**  1: Option 1 should be used for the generation of conditional reconfiguration for SN initiated inter-SN conditional PSCell change.  Option 1: The MN generates CPC. The source SN sets the execution condition and communicates it to the MN. The MN generates the conditional reconfiguration message including the execution condition(s) provided by the source SN and RRCReconfiguration provided by the candidate PSCell(s).  Agreement for RAN2#113e  **Agreements**  **1** In SN initiated CPC with MN involvement, the source SN transfers the execution condition(s) to the MN. FFS whether MN needs to comprehend the execution condition set by the source SN. FFS on stage-3 detail of coding of execution condition(s) in the final message.  2 Only SRB1 can be used in CPA and Inter-SN CPC scenarios in Rel-17. The complete message upon CPAC execution for CPA and Inter-SN CPC in Rel-17 should be provided to the MN via SRB1.  3 For the transmission of CPAC configuration, upon reception of RRCReconfiguration/RRCConnectionReconfiguration message with CPAC configuration, the UE shall reply the RRCReconfigurationComplete/RRCConnectionReconfigurationComplete message to the MN to inform that the message has been received. FFS if the message contains an embedded RRC complete message to the SN.  4 UE checks the validity of CPAC execution criteria configuration immediately on receiving the CPAC Reconfiguration message.  Compliance check for embedded RRCReconfiguration may be delayed until execution (up to UE implementation).  5 At least the following two options should be discussed for the transmission of RRC complete message upon the CPAC execution.  Option 1: If SRB1 is used for the transmission, in CPA and Inter-SN CPC, upon execution of CPAC, the UE shall reply the RRCReconfigurationComplete/RRCConnectionReconfigurationComplete message to the MN including an embedded RRC complete message to the SN, and then the MN informs the target SN. This assumes the scenario where the MCG configuration is/can be changed upon triggering the CPA and/or inter-SN CPC.  Option 2: If SRB1 is used for the transmission, in CPA and Inter-SN CPC, upon execution of CPAC, the ULInformationTransferMRDC should be used to transfer the complete message (as for intra-SN CPC). This assumes the scenario where the MCG configuration is not changed upon triggering the CPA and/or inter-SN CPC.  6 FFS if the configurations of all candidates PSCell configurations for CPA and Inter-SN PSCell change are released upon the successful completion of CPAC, conventional PSCell change or conventional PSCell addition.  7 FFS if SCGFailureInformation procedure can be taken as the baseline for CPAC failure handling in Rel-17 scenarios.  **Agreements**  **5**  For CPC initiated by MN, A4/B1 like execution condition should be supported.  6 FFS can be removed from the following agreement: " Compliance check for embedded RRCReconfiguration may be delayed until execution (up to UE ‎implementation). FFS if this introduces specification changes regarding compliance checking of ‎embedded Reconfiguration message containing configuration of conditional PSCell candidate.‎"  7 Non-conditional SCG RRC Reconfiguration can be sent in the same MN generated RRCRconfiguration message, which carries execution conditions and target candidate configurations. i.e. ‎the secondaryCellGroup can be sent in the same configuration message with the ‎conditionalReconfiguration for inter-SN CPC.  8a In case of CPA and MN initiated Inter-SN CPC, upon reception of ‎RRCReconfiguration/RRCConnectionReconfiguration message with CPAC configuration, UE responds with RRCReconfigurationComplete/RRCConnectionReconfigurationComplete message to the MN to inform ‎that the message has been received. The message does not include an embedded RRC complete message for source SN.  8b In case of SN initiated Inter-SN CPC, upon reception of ‎RRCReconfiguration/RRCConnectionReconfiguration message with CPAC configuration, UE responds with RRCReconfigurationComplete/RRCConnectionReconfigurationComplete message to MN. This message can include an embedded RRC complete message for source SN.  9 The message carrying ‎conditionalReconfiguration for CPA/CPC is in MN format (i.e. contains ‎both MCG and SCG re-configurations). For the following cases: a). MN-Initiated CPA b). MN-Initiated inter-SN CPC c). SN-initiated inter-SN CPC.  10 In CPA and Inter-SN CPC, upon execution of CPAC, ‎the UE ‎shall ‎reply the RRCReconfigurationComplete/RRCConnectionReconfigurationComplete ‎message to ‎the MN ‎including an embedded RRC complete message to the SN, and then the MN ‎informs the ‎target SN.  11 Working assumption: the configurations of all candidates PSCell configurations for CPA and Inter-SN PSCell change are ‎released upon the successful completion of CPAC, conventional PSCell change or conventional PSCell ‎addition.‎ This can be revisited if critical issues found in a later stage.  12 SCGFailureInformation procedure can be taken as the baseline for CPAC failure ‎handling in Rel-17 ‎scenarios.‎  FFS on the exact content of the message.  FFS if time allows on further ‎enhancements to CPAC failure handling‎ |   Agreement for RAN2#113b-e   |  | | --- | | 1. Source SN provides the candidate cells and it sets the execution condition per candidate cell. Signalling details are FFS (e.g. which messages and steps). 2. Blind Inter-SN CPC is not precluded (but we will not optimize it)   3 FFS whether it is possible for the target SN to come up with alternative candidate cells other than what suggested by the ‎source SN. ‎ |   Agreement for RAN2#114e   |  | | --- | | 1: In order to exchange per-PSCell parameter by reusing existing inter-node RRC message for CPAC, a list of CG-Config associated to each candidate PSCell should be sent from candidate SN to MN.  FFS if a list of CG-ConfigInfo from MN to candidate SN is needed. FFS if a list of CG-Config from source SN to MN is needed.  Discuss in Stage-3 whether new message is useful or not (based on signalling details)  Working assumption (to clarify agreements 1-3 above)  1. Upon SN initiated CPC configuration, S-SN indicates the CPC candidates to MN and for each an execution condition  2. S-SN can provide also measurements to MN/T-SN and this may include cells that are not CPC candidates  3. T-SN can either accept or reject the CPC candidates suggested by S-SN (as in 1) i.e. it cannot come up with any alternative candidates  4. S-SN is informed about which candidates were accepted/ rejected by T-SN  5. S-SN can subsequently update the (measurement) configuration. FFS for execution conditions.  6. S-SN can perform this update after the CPC configuration. FFS whether to support updating during the CPC configuration (i.e. solution 2). FFS whether nested procedure is suppported‎ |   Agreement for RAN2#115e   |  | | --- | | Bulk agreement  1: Reuse the conditionalReconfiguration field to configure CPAC (all scenarios) in Rel-17.  2a: For NR-DC, reuse the condRRCReconfig field to contain both MCG and SCG re-configurations for each candidate PSCell configuration. I.e. the RRC message contained in the condRRCReconfig is in MN format, in which the RRC message generated by the candidate SN is encapsulated in a RRC container (e.g. mrdc-SecondaryCellGroup).  2b: For (NG)EN-DC, reuse the condReconfigurationToApply field for (NG)EN-DC to contain both MCG and SCG re-configurations for each candidate PSCell configuration. I.e. the RRC message contained in the condReconfigurationToApply is in MN format, in which the RRC message generated by the candidate SN is encapsulated in a RRC container (e.g. nr-SecondaryCellGroupConfig).  3: For CPA and MN-initiated CPC, the execution conditions are configured in condExecutionCond for NR-DC, or triggerCondition for (NG)EN-DC and refer to an MCG MeasConfig.  5: For CPA and inter-SN CPC, condReconfigId/CondReconfigurationId of the selected target PSCell is included in the RRC Reconfigutation Complete message to the MN.  6: The existing EUTRA signalling in ReportConfigInterRAT is to be modified to support B1 events for CPA and MN initiated CPC in (NG)EN-DC .  7: The existing NR signalling in ReportConfigNR is to be modified to support A4 events for CPA and MN initiated CPC in NR-DC.  12a: A new field (e.g. condExecutionCondSN) in CondReconfigToAddMod is introduced for NR-DC to indicate that the execution condition refers to the SCG MeasConfig .  12b: A new field (e.g. triggerConditionSN) in CondReconfigurationAddMod for (NG)EN-DC is introduced to indicate that the execution condition refers to the SCG MeasConfig .  4: For CPA and inter-SN CPC, upon execution of CPAC, the UE includes the selected target PSCell information in the RRC Reconfiguration Complete message to the MN.  11: The MN does not need to comprehend the execution condition set by the source SN. The MN can associate the execution condition configuration to an RRCReconfiguration message provided by the target –SN without comprehending the execution condition set by the source SN.  10: The UE shall delete CPC related measConfig upon successful CPC execution (i.e. after RA completes and UE has sent RRC Reconfiguration Complete to MN). |   Agreement for RAN2#116e   |  | | --- | | 1: Introduce a new inter-node RRC message that includes the full list of CG-Config(s).  2: Specify the target PSCell identity (frequency and PCI) from target SN to MN (accepted) outside the corresponding CG-Config in the new inter-node message. FFS if we use the same message for all cases where target PSCell identity is uindicated (e.g. from source SN to MN for candidate PSCell)  4: Define a separate list of proposed PSCell candidates in CG-Config, including execution conditions (FFS on whether decision on solution 1 or 2 impacts this).  6: A list of proposed PSCell candidates is sent from MN to T-SN in the same way as from S-SN to MN. The execution conditions are not sent to T-SN and therefore a separate list is defined for proposed PSCell candidates.  3: Send an LS to RAN3 to inform about the new inter-node RRC message that includes a full list of CG-Config(s), and the corresponding impact to RAN3 specification.  4: RAN2 confirms the working assumption taken at RAN2#115 and adopts Solution 2 for SN-initiated CPC. Indicate this to LS in RAN3 and ask them to work on it (included in offline [222] from Ericsson). If they find a problem, we can revisit the decision.  1: RAN2 assumes MN decides whether to skip the second part of Solution 2 procedure. Up to network implementation which criteria are considered by the MN.  RAN2 thinks MN can skip the second part of procedure in Solution 2 at least when T-SN acknowledges all candidate PSCells. This needs not be captured in specifications.  No consensus to support A3/A5 for PSCell in MN-initiated CPC. | | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Capture the agreements made for introduction of CPA and inter-SN CPC in TS 36.331.  **Impact analysis**  Impacted 5G architecture options:  EN-DC  Impacted functionality:  CPA, CPC | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | CPA and inter-SN CPC are not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.2, 5.3.5.2, 5.3.5.3, 5.3.5.9, 5.3.7.3, 5.3.12, 5.5.1, 5.6.2a, 6.2.2, 6.3.4, 6.3.5, 7.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

*START OF CHANGE*

# 3 Definitions, symbols and abbreviations

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], TS 36.300 [9] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1] or TS 36.300 [9].

1xRTT CDMA2000 1x Radio Transmission Technology

AB Access Barring

ACDC Application specific Congestion control for Data Communication

ACK Acknowledgement

AILC Assistance Information bit for Local Cache

AM Acknowledged Mode

ANDSF Access Network Discovery and Selection Function

ARQ Automatic Repeat Request

AS Access Stratum

ASN.1 Abstract Syntax Notation One

AUL Autonomous Uplink

BCCH Broadcast Control Channel

BCD Binary Coded Decimal

BCH Broadcast Channel

BL Bandwidth reduced Low complexity

BLER Block Error Rate

BR Bandwidth Reduced

BR-BCCH Bandwidth Reduced Broadcast Control Channel

CA Carrier Aggregation

CAS Cell Acquisition Subframes

CBR Channel Busy Ratio

CCCH Common Control Channel

CCO Cell Change Order

CE Coverage Enhancement

CFI Control Format Indicator

CG Cell Group

CHO Conditional Handover

CIoT Cellular IoT

CMAS Commercial Mobile Alert Service

CPA Condition PSCell Addition

CP Control Plane

CPC Conditional PSCell Change

CP-EDT Control Plane EDT

C-RNTI Cell RNTI

CRS Cell-specific Reference Signal

CSFB CS fallback

CSG Closed Subscriber Group

CSI Channel State Information

DAPS Dual Active Protocol Stack

DC Dual Connectivity

DCCH Dedicated Control Channel

DCI Downlink Control Information

DCN Dedicated Core Networks

DFN Direct Frame Number

DL Downlink

DL-SCH Downlink Shared Channel

DRB (user) Data Radio Bearer

DRX Discontinuous Reception

DTCH Dedicated Traffic Channel

EAB Extended Access Barring

eDRX Extended DRX

EDT Early Data Transmission

EHPLMN Equivalent Home Public Land Mobile Network

eIMTA Enhanced Interference Management and Traffic Adaptation

ENB Evolved Node B

EN-DC E-UTRA NR Dual Connectivity with E-UTRAN connected to EPC

EPC Evolved Packet Core

EPDCCH Enhanced Physical Downlink Control Channel

EPS Evolved Packet System

ETWS Earthquake and Tsunami Warning System

E-UTRA Evolved Universal Terrestrial Radio Access

E-UTRA/5GC E-UTRA connected to 5GC

E-UTRA/EPC E-UTRA connected to EPC

E-UTRAN Evolved Universal Terrestrial Radio Access Network

FDD Frequency Division Duplex

FFS For Further Study

GERAN GSM/EDGE Radio Access Network

GNSS Global Navigation Satellite System

G-RNTI Group RNTI

GSM Global System for Mobile Communications

GWUS Group Wake Up Signal

HARQ Hybrid Automatic Repeat Request

HFN Hyper Frame Number

HPLMN Home Public Land Mobile Network

HRPD CDMA2000 High Rate Packet Data

HSDN High Speed Dedicated Network

H-SFN Hyper SFN

IAB Integrated Access and Backhaul

IAB-DU IAB-node DU

IAB-MT IAB Mobile Termination

IDC In-Device Coexistence

IE Information element

IMEI International Mobile Equipment Identity

IMSI International Mobile Subscriber Identity

IoT Internet of Things

ISM Industrial, Scientific and Medical

kB Kilobyte (1000 bytes)

L1 Layer 1

L2 Layer 2

L3 Layer 3

LAA Licensed-Assisted Access

LWA LTE-WLAN Aggregation

LWAAP LTE-WLAN Aggregation Adaptation Protocol

LWIP LTE-WLAN Radio Level Integration with IPsec Tunnel

MAC Medium Access Control

MBMS Multimedia Broadcast Multicast Service

MBSFN Multimedia Broadcast multicast service Single Frequency Network

MCG Master Cell Group

MCOT Maximum Channel Occupancy Time

MCPTT Mission Critical Push To Talk

MDT Minimization of Drive Tests

MIB Master Information Block

MO Mobile Originating

MPDCCH MTC Physical Downlink Control Channel

MRB MBMS Point to Multipoint Radio Bearer

MR-DC Multi-Radio Dual Connectivity

MRO Mobility Robustness Optimisation

MSI MCH Scheduling Information

MT Mobile Terminating

MTSI Multimedia Telephony Service for IMS

MUST MultiUser Superposition Transmission

N/A Not Applicable

NACC Network Assisted Cell Change

NAICS Network Assisted Interference Cancellation/Suppression

NAS Non Access Stratum

NB-IoT NarrowBand Internet of Things

NE-DC NR E-UTRA Dual Connectivity

(NG)EN-DC E-UTRA NR Dual Connectivity (i.e. covering both EN-DC and NGEN-DC)

NGEN-DC E-UTRA NR Dual Connectivity with E-UTRAN connected to 5GC

NPBCH Narrowband Physical Broadcast channel

NPDCCH Narrowband Physical Downlink Control channel

NPDSCH Narrowband Physical Downlink Shared channel

NPRACH Narrowband Physical Random Access channel

NPSS Narrowband Primary Synchronization Signal

NPUSCH Narrowband Physical Uplink Shared channel

NR NR Radio Access

NRS Narrowband Reference Signal

NSSAI Network Slice Selection Assistance Information

NSSS Narrowband Secondary Synchronization Signal

OS OFDM Symbol

P2X Pedestrian-to-Everything

PCCH Paging Control Channel

PCell Primary Cell

PDCCH Physical Downlink Control Channel

PDCP Packet Data Convergence Protocol

PDU Protocol Data Unit

PLMN Public Land Mobile Network

PMK Pairwise Master Key

PO Paging Occasion

posSIB Positioning SIB

ProSe Proximity based Services

PS Public Safety (in context of sidelink), Packet Switched (otherwise)

PSCell Primary Secondary Cell

PSK Pre-Shared Key

PTAG Primary Timing Advance Group

PUCCH Physical Uplink Control Channel

PUR Preconfigured Uplink Resource

QCI QoS Class Identifier

QoE Quality of Experience

QoS Quality of Service

RACH Random Access CHannel

RAI Release Assistance Indication

RAT Radio Access Technology

RB Radio Bearer

RCLWI RAN Controlled LTE-WLAN Integration

RLC Radio Link Control

RLOS Restricted Local Operator Services

RMTC RSSI Measurement Timing Configuration

RN Relay Node

RNA RAN-based Notification Area

RNAU RAN-based Notification Area Update

RNTI Radio Network Temporary Identifier

ROHC RObust Header Compression

RPLMN Registered Public Land Mobile Network

RRC Radio Resource Control

RSCP Received Signal Code Power

RSRP Reference Signal Received Power

RSRQ Reference Signal Received Quality

RSS Resynchronisation signal

RSSI Received Signal Strength Indicator

SAE System Architecture Evolution

SAP Service Access Point

SBAS Satellite Based Augmentation System

SC Sidelink Control

SCell Secondary Cell

SCG Secondary Cell Group

SC-MRB Single Cell MRB

SC-RNTI Single Cell RNTI

SD-RSRP Sidelink Discovery Reference Signal Received Power

SFN System Frame Number

SI System Information

SIB System Information Block

SI-RNTI System Information RNTI

SL Sidelink

SLSS Sidelink Synchronisation Signal

SMC Security Mode Control

SMTC SS/PBCH Block Measurement Timing Configuration

SPDCCH Short PDCCH

SPS Semi-Persistent Scheduling

SPT Short Processing Time

SPUCCH Short PUCCH

SR Scheduling Request

SRB Signalling Radio Bearer

S-RSRP Sidelink Reference Signal Received Power

SSAC Service Specific Access Control

SSTD SFN and Subframe Timing Difference

STAG Secondary Timing Advance Group

S-TMSI SAE Temporary Mobile Station Identifier

STTI Short TTI

TA Tracking Area

TAG Timing Advance Group

TDD Time Division Duplex

TDM Time Division Multiplexing

TM Transparent Mode

TPC-RNTI Transmit Power Control RNTI

T-RPT Time Resource Pattern of Transmission

TTI Transmission Time Interval

TTT Time To Trigger

UDC Uplink Data Compression

UE User Equipment

UICC Universal Integrated Circuit Card

UL Uplink

UL-SCH Uplink Shared Channel

UM Unacknowledged Mode

UP User Plane

UP-EDT User Plane EDT

UTC Coordinated Universal Time

UTRAN Universal Terrestrial Radio Access Network

V2X Vehicle-to-Everything

VoLTE Voice over Long Term Evolution

WLAN Wireless Local Area Network

WT WLAN Termination

WUS Wake-up Signal

In the ASN.1, lower case may be used for some (parts) of the above abbreviations e.g. c-RNTI.

*NEXT CHANGE*

5.3.5.2 Initiation

E-UTRAN may initiate the RRC connection reconfiguration procedure to a UE in RRC\_CONNECTED. E-UTRAN applies the procedure as follows:

- the *mobilityControlInfo* is included only when AS-security has been activated, and SRB2 with at least one DRB are setup and not suspended;

- the establishment of RBs (other than SRB1, that is established during RRC connection establishment) is included only when AS security has been activated;

- the addition of SCells is performed only when AS security has been activated;

- the addition, release or modification of conditional reconfigurations is performed only when AS security has been activated, and SRB2 with at least one DRB are setup and not suspended;

The UE initiates the RRC connection reconfiguration procedure while in RRC\_CONNECTED when a conditional reconfiguration (e.g. CHO, CPA, or inter-SN CPC) is executed i.e. upon the fulfilment of an execution condition, an associated *RRCConnectionReconfiguration* that is stored is applied.

NOTE: Embedding in an NR Reconfiguration is used for the transfer of IRAT DL DCCH information as used for V2X sidelink communication related information specified by NR RRC e.g. to configure dedicated pool related information, CBR measurements, provision of grant assistance.

5.3.5.3 Reception of an *RRCConnectionReconfiguration* not including the *mobilityControlInfo* by the UE

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and theUE is able to comply with the configuration included in this message, the UE shall:

1> if the received *RRCConnectionReconfiguration* includes the *daps-SourceRelease*:

2> reset source MCG MAC and release the source MCG MAC configuration;

2> for each DAPS bearer:

3> re-establish the RLC entity or entities for the source PCell;

3> release the RLC entity or entities and the associated DTCH logical channel for the source PCell;

3> reconfigure the PDCP entity to release DAPS, as specified in TS 36.323 [8];

2> for each SRB:

3> release the PDCP entity for the source PCell;

3> release the RLC entity and the associated DCCH logical channel for the source PCell;

2> release the physical channel configuration for the source PCell;

1> if this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC connection re-establishment procedure:

2> re-establish PDCP for SRB2 configured with E-UTRA PDCP entity and for all DRBs that are established and configured with E-UTRA PDCP, if any;

2> re-establish RLC for SRB2 and for all DRBs that are established and configured with E-UTRA RLC, if any;

2> if the *RRCConnectionReconfiguration* message includes the *fullConfig*:

3> perform the radio configuration procedure as specified in 5.3.5.8;

2> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

3> perform the radio resource configuration procedure as specified in 5.3.10;

NOTE 1: Void

NOTE 2: Void

1> else:

2> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

3> perform the radio resource configuration procedure as specified in 5.3.10;

NOTE 3: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

1> if the received *RRCConnectionReconfiguration* includes the *sCellToReleaseList*:

2> perform SCell release as specified in 5.3.10.3a;

1> if the received *RRCConnectionReconfiguration* includes the *sCellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

1> if the received *RRCConnectionReconfiguration* includes the *sCellGroupToReleaseList*:

2> perform SCell group release as specified in 5.3.10.3d;

1> if the received *RRCConnectionReconfiguration* includes the *sCellGroupToAddModList*:

2> perform SCell group addition or modification as specified in 5.3.10.3e;

1> if the received *RRCConnectionReconfiguration* includes the *scg-Configuration*; or

1> if the current UE configuration includes one or more split DRBs configured with *pdcp-Config* and the received *RRCConnectionReconfiguration* includes *radioResourceConfigDedicated* including *drb-ToAddModList*:

2> perform SCG reconfiguration as specified in 5.3.10.10;

1> if the received *RRCConnectionReconfiguration* includes the *nr-Config* and it is set to *release*: or

1> if the received *RRCConnectionReconfiguration* includes *endc-ReleaseAndAdd* and it is set to *TRUE*:

2> perform MR-DC release as specified in TS 38.331 [82], clause 5.3.5.10;

1> if the received *RRCConnectionReconfiguration* includes the *sk-Counter*:

2> perform key update procedure as specified in TS 38.331 [82], clause 5.3.5.7;

1> if the received *RRCConnectionReconfiguration* includes the *nr-SecondaryCellGroupConfig*:

2> perform NR RRC Reconfiguration as specified in TS 38.331 [82], clause 5.3.5.3;

1> if the received *RRCConnectionReconfiguration* includes the *nr-RadioBearerConfig1*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> if the received *RRCConnectionReconfiguration* includes the *nr-RadioBearerConfig2*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> if this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC connection re-establishment procedure:

2> resume SRB2 and all DRBs that are suspended, if any, including RBs configured with NR PDCP;

NOTE 4: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

NOTE 5: The UE may discard SRB2 messages and data that it receives prior to completing the reconfiguration used to resume these bearers.

1> if the received *RRCConnectionReconfiguration* includes the *systemInformationBlockType1Dedicated*:

2> perfom the actions upon reception of the *SystemInformationBlockType1* message as specified in 5.2.2.7*;*

1> if the received *RRCConnectionReconfiguration* includes the *systemInformationBlockType2Dedicated*:

2> perfom the actions upon reception of the *SystemInformationBlockType2* message as specified in 5.2.2.9;

1> if the *RRCConnectionReconfiguration* message includes the *dedicatedInfoNASList*:

2> forward each element of the *dedicatedInfoNASList* to upper layers in the same order as listed;

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

1> if the *RRCConnectionReconfiguration* message includes the *otherConfig*:

2> perform the other configuration procedure as specified in 5.3.10.9;

1> if the *RRCConnectionReconfiguration* message includes the *sl-DiscConfig* or *sl-CommConfig*:

2> perform the sidelink dedicated configuration procedure as specified in 5.3.10.15;

1> if the *RRCConnectionReconfiguration* message includes the *sl-V2X-ConfigDedicated*:

2> perform the V2X sidelink communication dedicated configuration procedure as specified in 5.3.10.15a;

NOTE 5a: If the *sl-V2X-ConfigDedicated* was received embedded within an NR *RRCReconfiguration* message, the UE does not build an E-UTRA *RRCConnectionReconfigurationComplete* message for the received *sl-V2X-ConfigDedicated*.

1> if the *RRCConnectionReconfiguration* message includes the *sl-ConfigDedicatedForNR*:

2> perform the related procedures for NR sidelink communication in accordance with TS 38.331 [82], clause 5.3.5.14 and clause 5.5.2;

1> if the *RRCConnectionReconfiguration* message includes *wlan-OffloadInfo*:

2> perform the dedicated WLAN offload configuration procedure as specified in 5.6.12.2;

1> if the *RRCConnectionReconfiguration* message includes *rclwi-Configuration*:

2> perform the WLAN traffic steering command procedure as specified in 5.6.16.2;

1> if the *RRCConnectionReconfiguration* message includes *lwa-Configuration*:

2> perform the LWA configuration procedure as specified in 5.6.14.2;

1> if the *RRCConnectionReconfiguration* message includes *lwip-Configuration*:

2> perform the LWIP reconfiguration procedure as specified in 5.6.17.2;

1> upon RRC connection establishment, if UE does not need UL gaps during continuous uplink transmission:

2> configure lower layers to stop using UL gaps during continuous uplink transmission in FDD for *RRCConnectionReconfigurationComplete* message and subsequent uplink transmission in RRC\_CONNECTED except for UL transmissions as specified in TS36.211 [21];

1> if the *RRCConnectionReconfiguration* message includes the *conditionalReconfiguration*:

2> perform conditional reconfiguration as specified in 5.3.5.9;

NOTE 6: In case of conditional reconfiguration the text "if the received *RRCConnectionReconfiguration. . .*" corresponds to applying the stored *RRCConnectionReconfiguration* message (according to 5.3.5.9.5).

1> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the *RRCConnectionReconfiguration* message includes *perCC-GapIndicationRequest*:

3> include *perCC-GapIndicationList* and *numFreqEffective*;

2> if the frequencies are configured for reduced measurement performance:

3> include *numFreqEffectiveReduced*;

2> if the received *RRCConnectionReconfiguration* message included *nr-SecondaryCellGroupConfig*:

3> include *scg-ConfigResponseNR* in accordance with TS 38.331 [82], clause 5.3.5.3;

3> if the *RRCConnectionReconfiguration* message is applied due to a conditional reconfiguration execution:

4> include in *selectedCondReconfigurationToApply* the *condReconfigurationId* of the conditional reconfiguration which has been executed;

1> if the UE is configured to operate in EN-DC as result of this procedure, forward *upperLayerIndication*, as if the UE receives this field from SIB2, to upper layers, otherwise indicate upper layers absence of this field;

1> if the UE is configured with NE-DC:

2> if the received *RRCConnectionReconfiguration* message was included in an NR *RRCResume* message:

3> transfer the *RRCConnectionReconfigurationComplete* message via SRB1 embedded in NR RRC message *RRCResumeComplete* as specified in TS 38.331 [82], clause 5.3.13.4;

2> else:

3> transfer the *RRCConnectionReconfigurationComplete* message via SRB1 embedded in NR RRC message *RRCReconfigurationComplete* as specified in TS 38.331 [82], clause 5.3.5.3;

1> else:

2> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

*NEXT CHANGE*

5.3.5.9 Conditional reconfiguration

5.3.5.9.1 General

The network configures the UE with conditional reconfiguration (i.e. conditional handover, conditional PSCell addition, or inter-SN conditional PSCell change) including per candidate target cell an *RRCConnectionReconfiguration* to be stored and to be applied upon the fulfilment of an associated execution condition.

The UE shall:

1> if the received *conditionalReconfiguration* includes the *condReconfigurationToRemoveList*:

2> perform the conditional reconfiguration removal procedure as specified in 5.3.5.9.2;

1> if the received *conditionalReconfiguration* includes the *condReconfigurationToAddModList*:

2> perform the conditional reconfiguration addition/modification procedure as specified in 5.3.5.9.3;

5.3.5.9.2 Conditional reconfiguration removal

The UE shall:

1> for each *CondReconfigurationId* included in the *condReconfigurationToRemoveList* that is part of the current UE configuration in *VarConditionalReconfiguration*:

2> remove the entry with the matching *condReconfigurationId* from the *condReconfigurationList* within the *VarConditionalReconfiguration*.

NOTE: The UE does not consider the message as erroneous if the *condReconfigurationToRemoveList* includes any *CondReconfigurationId* value that is not part of the current UE configuration.

5.3.5.9.3 Conditional reconfiguration addition/modification

The UE shall:

1> for each *condReconfigurationId* included in the *condReconfigurationToAddModList*:

2> if an entry with the matching *condReconfigurationId* exists in the *condReconfigurationList* within the *VarConditionalReconfiguration*:

3> if the entry in *condReconfigurationToAddModList* includes a *triggerCondition* or *triggerConditionSN*;

4> replace *triggerCondition* or *triggerConditionSN* within the *VarConditionalReconfiguration* with the value received for this *condReconfigurationId*

3> if the entry in *condReconfigurationToAddModList* includes an *condReconfigurationToApply*;

4> replace *condReconfigurationToApply* within the *VarConditionalReconfiguration* with the value received for this *condReconfigurationId*;

2> else:

3> add a new entry for this *condReconfigurationId* within the *VarConditionalReconfiguration*;

3> store the associated *RRCConnectionReconfiguration* in *VarConditionalReconfiguration*.

5.3.5.9.4 Conditional reconfiguration evaluation

If AS security has been activated successfully, the UE shall:

1> if *VarConditionalReconfiguration* includes at least one *condReconfigurationId*:

2> perform conditional reconfiguration evaluation;

1> for each *condReconfigurationId* within the *VarConditionalReconfiguration*:

2> consider the cell which has a physical cell identity matching the value indicated in the *ServingCellConfigCommon* within *condReconfigurationToApply* to be an applicable cell;

2> consider the cell which has a physical cell identity matching the value indicated in the *ServingCellConfigCommon* included in the *reconfigurationWithSync* in the *nr-SecondaryCellGroupConfig* within the received *condReconfigurationToApply* to be an applicable cell;

2> if *triggerCondition* is configured;

3> in the remainder of the procedures, consider the *VarMeasConfig* indicated in the *triggerCondition* is the *VarMeasConfig* associated with the *measConfig* configured by the MN;

2> if *triggerConditionSN* is configured;

3> in the remainder of the procedures, consider the *VarMeasConfig* indicated in the *triggerConditionSN* is the *VarMeasConfig* associated with the *measConfig* configured by the SN;

2> for each *measId* included in the *measIdList* within *VarMeasConfig* indicated in the *triggerCondition* or *triggerConditionSN* associated to *condReconfigurationId:*

3> if the entry condition(s) applicable for this event associated with the *condReconfigurationId*, i.e. the event corresponding with the *condEventId* of the corresponding *condReconfigurationTriggerEUTRA* within *VarConditionalReconfiguration*, or the event corresponding with the *condEventId* of the corresponding *condReconfigurationTriggerNR* within *VarConditionalReconfiguration*, is fulfilled for the applicable cell for all measurements after layer 3 filtering taken during the corresponding *timeToTrigger* defined for this event within the *VarConditionalReconfiguration*:

4> consider the entry condition for the associated *measId* within *triggerCondition* or *triggerConditionSN* as fulfilled;

3> if the *measId* for this event associated with the *condReconfigurationId* has been modified; or

3> if the leaving condition(s) applicable for this event associated with the *condReconfigurationId*, i.e. the event corresponding with the *condEventId(s)* of the corresponding *condReconfigurationTriggerEUTRA* within *VarConditionalReconfiguration*, or the event corresponding with the *condEventId* of the corresponding *condReconfigurationTriggerNR* within *VarConditionalReconfiguration*, is fulfilled for the applicable cells for all measurements after layer 3 filtering taken during the corresponding *timeToTrigger* defined for this event within the *VarConditionalReconfiguration*:

4> consider the event associated to that *measId* to be not fulfilled;

2> if trigger conditions for all associated *measId*(s) within *triggerCondition* or *triggerConditionSN* are fulfilled:

3> consider the target cell candidate within the stored *condReconfigurationToApply*, associated to that *condReconfigurationId*, as a triggered cell;

3> initiate the conditional reconfiguration execution, as specified in 5.3.5.9.5;

5.3.5.9.5 Conditional reconfiguration execution

The UE shall:

1> if more than one triggered cell exists:

2> select one of the triggered cells as the selected cell for conditional reconfiguration;

1> for the selected cell of conditional reconfiguration:

2> apply the stored *condReconfigurationToApply* associated to that *condReconfigurationId* and perform the actions as specified in 5.3.5.4, or perform the actions as specified in 5.3.5.3;

5.3.5.9.6 VarConditionalReconfiguration remove

The UE shall:

1> remove all the entries within *VarConditionalReconfiguration*;

1> for each *measId*, that is part of the current UE configuration in *VarMeasConfig*, if the associated *reportConfig* has *condReconfigurationTriggerEUTRA*/*condReconfigurationTriggerNR* configured:

2> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

2> if the associated *measObjectId* is only associated with *condReconfigurationTriggerEUTRA*/ *condReconfigurationTriggerNR*:

3> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

*NEXT CHANGE*

5.3.7.3 Actions following cell selection while T311 is running

Upon selecting a suitable E-UTRA cell, the UE shall:

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> if the UE is connected to 5GC and the selected cell is only connected to EPC; or

1> if the UE is connected to EPC and the selected cell is only connected to 5GC:

2> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'RRC connection failure';

1> else:

2> stop timer T311;

2> if the cell selection is triggered by detecting radio link failure of the MCG or handover failure (including intra-E-UTRA handover and mobility from E-UTRA); and

2> if *attemptCondReconf* is configured; and

2> if the selected cell is one of the target candidate cells in *VarConditionalReconfiguration*:

3> apply the stored *condReconfigurationToApply* of the selected cell and perform the actions as specified in 5.3.5.4;

2> else:

3> if the UE is configured with *conditionalReconfiguration*:

4> release *uplinkDataCompression*, if configured;

4> suspend all RBs, including RBs configured with NR PDCP, except SRB0;

4> reset MAC;

4> release the MCG SCell(s), if configured, in accordance with 5.3.10.3a;

4> release the SCell group(s), if configured, in accordance with 5.3.10.3d;

4> apply the default physical channel configuration as specified in 9.2.4;

4> for the MCG, apply the default semi-persistent scheduling configuration as specified in 9.2.3;

4> for the MCG, apply the default MAC main configuration as specified in 9.2.2;

4> release *powerPrefIndicationConfig*, if configured and stop timer T340, if running;

4> release *reportProximityConfig*, if configured and clear any associated proximity status reporting timer;

4> release *obtainLocationConfig*, if configured;

4> release *idc-Config*, if configured;

4> release *sps-AssistanceInfoReport*, if configured;

4> release *measSubframePatternPCell*, if configured;

4> release the entire SCG configuration, if configured, except for the DRB configuration (as configured by *drb-ToAddModListSCG*);

4> if (NG)EN-DC is configured:

5> perform MR-DC release, as specified in TS 38.331[82], clause 5.3.5.10;

5> release *p-MaxEUTRA*, if configured;

5> release *p-MaxUE-FR1*, if configured;

5> release *tdm-PatternConfig* or *tdm-PatternConfig2*, if configured;

4> release *naics-Info* for the PCell, if configured;

4> if connected as an RN and configured with an RN subframe configuration:

5> release the RN subframe configuration;

4> release the LWA configuration, if configured, as described in 5.6.14.3;

4> release the LWIP configuration, if configured, as described in 5.6.17.3;

4> release *delayBudgetReportingConfig*, if configured and stop timer T342, if running;

4> release *bw-PreferenceIndicationTimer*, if configured and stop timer T341, if running;

4> release *overheatingAssistanceConfig* and *overheatingAssistanceConfigForSCG*, if configured and stop timer T345, if running;

4> release *ailc-BitConfig*, if configured;

3> remove all the entries within *VarConditionalReconfiguration*, if any;

3> for each *measId*, that is part of the current UE configuration in *VarMeasConfig*, if the associated *reportConfig* has *condReconfigurationTriggerEUTRA/condReconfigurationTriggerNR* configured:

4> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

4> if the associated *measObjectId* is only associated with *condReconfigurationTriggerEUTRA/condReconfigurationTriggerNR*:

5> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

4> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

3> start timer T301;

3> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

3> if the UE is a NB-IoT UE connected to EPC, the UE supports RRC connection re-establishment for the Control Plane CIoT EPS optimisation and AS security has not been activated; and

3> if *cp-reestablishment* is not included in *SystemInformationBlockType2-NB*:

4> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'RRC connection failure';

3> else:

4> initiate transmission of the *RRCConnectionReestablishmentRequest* message in accordance with 5.3.7.4;

NOTE: This procedure applies also if the UE returns to the source PCell.

Upon selecting an inter-RAT cell, the UE shall:

1> if the selected cell is a UTRA cell, and if the UE supports Radio Link Failure Report for Inter-RAT MRO, include *selectedUTRA-CellId* in the *VarRLF-Report* and set it to the physical cell identity and carrier frequency of the selected UTRA cell;

1> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'RRC connection failure';

*NEXT CHANGE*

5.3.12 UE actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE

Upon leaving RRC\_CONNECTED or RRC\_INACTIVE, the UE shall:

1> reset MAC;

1> if leaving RRC\_INACTIVE was not triggered by the reception of *RRCConnectionRelease* including *idleModeMobilityControlInfo* or *altFreqPriorities*:

2> stop the timer T320 and T323, if running;

2> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

2> if stored, discard the *altFreqPriorities* provided by the *RRCConnectionRelease*;

1> if entering RRC\_IDLE was triggered by reception of the *RRCConnectionRelease* message including a *waitTime*:

2> start timer T302, with the timer value set according to the *waitTime*;

2> inform the upper layer that access barring is applicable for all access categories except categories '0' and '2';

1> else if T302 is running:

2> stop timer T302;

2> if the UE is connected to 5GC:

3> perform the actions as specified in 5.3.16.4;

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> stop all timers that are running except T302, T320, T322, T323, T325, T330, T331;

1> release *crs-ChEstMPDCCH-ConfigDedicated*, if configured;

1> if leaving RRC\_CONNECTED was triggered by suspension of the RRC:

2> re-establish RLC entities for all SRBs and DRBs, including RBs configured with NR PDCP;

2> remove all entries within *VarConditionalReconfiguration*, if any;

2> for each *measId*, that is part of the current UE configuration in *VarMeasConfig,* if the associated *reportConfig* has *condReconfigurationTriggerEUTRA/condReconfigurationTriggerNR* configured:

3> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

3> if the associated *measObjectId* is only associated with *condReconfigurationTriggerEUTRA/condReconfigurationTriggerNR*:

4> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

3> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> store the UE AS Context including the current RRC configuration, the current security context, the PDCP state including ROHC state, C-RNTI used in the source PCell, the *cellIdentity* and the physical cell identity of the source PCell, and the *spCellConfigCommon* within *ReconfigurationWithSync* of the PSCell (if configured);

2> store the following information provided by E-UTRAN:

3> if the UE connected to 5GC is a BL UE or UE in CE:

4> the *fullI-RNTI*, if present;

4> the *shortI-RNTI*, if present;

3> else:

4> the *resumeIdentity*;

3> the *nextHopChainingCount*, if present. Otherwise discard any stored *nextHopChainingCount* that does not correspond to stored key KRRCint;

3> the *drb-ContinueROHC*, if present. Otherwise discard any stored *drb-ContinueROHC*;

2> suspend all SRB(s) and DRB(s), including RBs configured with NR PDCP, except SRB0;

2> if the UE connected to 5GC is a BL UE or UE in CE, indicate PDCP suspend to lower layers of all DRBs;

2> if the UE is connected to 5GC:

3> indicate the idle suspension of the RRC connection to upper layers;

2> else:

3> indicate the suspension of the RRC connection to upper layers;

2> configure lower layers to suspend integrity protection and ciphering;

NOTE 1: Except when resuming an RRC connection after early security reactivation in accordance with conditions in 5.3.3.18, ciphering is not applied for the subsequent *RRCConnectionResume* message used to resume the connection and an integrity check is performed by lower layers, but merely upon request from RRC.

1> else:

2> upon leaving RRC\_INACTIVE:

3> discard the UE Inactive AS context;

3> discard the KeNB, the KRRCenc key, the KRRCint and the KUPenc key;

2> release *rrc-InactiveConfig*, if configured;

2> remove all entries within *VarConditionalReconfiguration*, if any;

2> for each *measId*, that is part of the current UE configuration in *VarMeasConfig,* if the associated *reportConfig* has *condReconfigurationTriggerEUTRA/condReconfigurationTriggerNR* configured:

3> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

3> if the associated *measObjectId* is only associated with *condReconfigurationTriggerEUTRA/condReconfigurationTriggerNR*:

4> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

3> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> release all radio resources, including release of the MAC configuration, the RLC entity and the associated PDCP entity and SDAP (if any) for all established RBs, except for the following:

- *pur-Config*, if stored;

2> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC\_CONNECTED was triggered neither by reception of the *MobilityFromEUTRACommand* message nor by selecting an inter-RAT cell while T311 was running; or

1> if leaving RRC\_INACTIVE was not triggered by the inter-RAT cell reselection:

2> if timer T350 is configured:

3> start timer T350;

3> apply *rclwi-Configuration* if configured, otherwise apply the *wlan-Id-List* corresponding to the RPLMN included in *SystemInformationBlockType17*;

2> else:

3> release the *wlan-OffloadConfigDedicated*, if received;

3> if the *wlan-OffloadConfigCommon* corresponding to the RPLMN is broadcast by the cell:

4> apply the *wlan-OffloadConfigCommon* corresponding to the RPLMN included in *SystemInformationBlockType17*;

4> apply *steerToWLAN* if configured, otherwise apply the *wlan-Id-List* corresponding to the RPLMN included in *SystemInformationBlockType17*;

2> enter RRC\_IDLE and perform procedures as specified in TS 36.304 [4], clause 5.2.7;

1> else:

2> release the *wlan-OffloadConfigDedicated*, if received;

NOTE 2: BL UEs or UEs in CE verifies validity of SI when released to RRC\_IDLE.

1> release the LWA configuration, if configured, as described in 5.6.14.3;

1> release the LWIP configuration, if configured, as described in 5.6.17.3;

*NEXT CHANGE*

5.5.1 Introduction

The UE reports measurement information in accordance with the measurement configuration and performs conditional reconfiguration evaluation in accordance with conditional reconfiguration as provided by E-UTRAN. E-UTRAN provides the measurement configuration or the conditional reconfiguration applicable for a UE in RRC\_CONNECTED by means of dedicated signalling, i.e. using the *RRCConnectionReconfiguration* or *RRCConnectionResume* message.

The UE can be requested to perform the following types of measurements:

- Intra-frequency measurements: measurements at the downlink carrier frequency(ies) of the serving cell(s).

- Inter-frequency measurements: measurements at frequencies that differ from any of the downlink carrier frequency(ies) of the serving cell(s).

- Inter-RAT measurements of NR frequencies.

- Inter-RAT measurements of UTRA frequencies.

- Inter-RAT measurements of GERAN frequencies.

- Inter-RAT measurements of CDMA2000 HRPD or CDMA2000 1xRTT or WLAN frequencies.

- CBR measurements for V2X sidelink communication.

- Sensing measurements for V2X sidelink communication.

The measurement configuration includes the following parameters:

1. **Measurement objects:** The objects on which the UE shall perform the measurements.

- For intra-frequency and inter-frequency measurements a measurement object is a single E-UTRA carrier frequency. Associated with this carrier frequency, E-UTRAN can configure a list of cell specific offsets, a list of 'blacklisted' cells and a list of 'whitelisted' cells. Blacklisted cells are not considered in event evaluation or measurement reporting.

- For inter-RAT NR measurements a measurement object is a single NR carrier frequency. Associated with this carrier frequency, E-UTRAN can configure a list of 'blacklisted' cells. Blacklisted cells are not considered in event evaluation or measurement reporting.

- For inter-RAT UTRA measurements a measurement object is a set of cells on a single UTRA carrier frequency.

- For inter-RAT GERAN measurements a measurement object is a set of GERAN carrier frequencies.

- For inter-RAT CDMA2000 measurements a measurement object is a set of cells on a single (HRPD or 1xRTT) carrier frequency.

- For inter-RAT WLAN measurements a measurement object is a set of WLAN identifiers and optionally a set of WLAN frequencies.

- For CBR measurements and sensing measurements a measurement object is a set of transmission resource pools for V2X sidelink communication.

NOTE 1: Some measurements using the above mentioned measurement objects, only concern a single cell, e.g. measurements used to report neighbouring cell system information, PCell UE Rx-Tx time difference, or a pair of cells, e.g. SSTD measurements between the PCell and the PSCell.

2. **Reporting configurations**: A list of measurement reporting configurations where each measurement reporting configuration consists of the following:

- Reporting criterion: The criterion that triggers the UE to send a measurement report. This can either be periodical or a single event description.

- Reporting format: The quantities that the UE includes in the measurement report and associated information (e.g. number of cells to report).

In case of conditional handover, conditional PSCell addition or MN initiated inter-SN conditional PSCell change triggering configuration, each configuration consists of the following:

- Execution criteria: The criteria that triggers the UE to perform conditional handover, conditional PSCell addition or MN initiated inter-SN conditional PSCell change.

3. **Measurement identities**: For measurement reporting, a list of measurement identities where each measurement identity links one measurement object with one measurement reporting configuration. By configuring multiple measurement identities it is possible to link more than one measurement object to the same reporting configuration, as well as to link more than one reporting configuration to the same measurement object. The measurement identity is used as a reference number in the measurement report. For conditional reconfiguration triggering, one measurement identity links to exactly one conditional reconfiguration trigger configuration. And up to two measurement identities can be linked to one conditional reconfiguration execution condition.

4. **Quantity configurations:** One quantity configuration is configured per RAT type. The quantity configuration defines the measurement quantities and associated filtering used for all event evaluation and related reporting of that measurement type. One filter can be configured per measurement quantity, except for NR where the network may configure up to 2 sets of quantity configurations each comprising per measurement quantity seperate filters for cell and RS index measurement results. The quantity configuration set that applies for a given measurement is indicated within the NR measurement object.

5. **Measurement gaps:** Periods that the UE may use to perform measurements, i.e. no (UL, DL) transmissions are scheduled.

E-UTRAN only configures a single measurement object for a given frequency (except for WLAN and except for CBR measurements), i.e. it is not possible to configure two or more measurement objects for the same frequency with different associated parameters, e.g. different offsets and/ or blacklists. E-UTRAN may configure multiple instances of the same event e.g. by configuring two reporting configurations with different thresholds.

The UE maintains a single measurement object list, a single reporting configuration list, and a single measurement identities list. The measurement object list includes measurement objects, that are specified per RAT type, possibly including intra-frequency object(s) (i.e. the object(s) corresponding to the serving frequency(ies)), inter-frequency object(s) and inter-RAT objects. Similarly, the reporting configuration list includes E-UTRA and inter-RAT reporting configurations. Any measurement object can be linked to any reporting configuration of the same RAT type. Some reporting configurations may not be linked to a measurement object. Likewise, some measurement objects may not be linked to a reporting configuration.

The measurement procedures distinguish the following types of cells:

1. The serving cell(s) - these are the PCell and one or more SCells, if configured for a UE supporting CA or DC. Likewise, NR serving cell(s) are the NR PCell, NR PSCell and NR SCells, if the UE is configured with MR-DC.

2. Listed cells - these are cells listed within the measurement object(s) or, for inter-RAT WLAN, the WLANs matching the WLAN identifiers configured in the measurement object or the WLAN the UE is connected to.

3. Detected cells - these are cells that are not listed within the measurement object(s) but are detected by the UE on the carrier frequency(ies) indicated by the measurement object(s) or, for inter-RAT WLAN, the WLANs not included in the *measObjectWLAN* but meeting the triggering requirements.

For E-UTRA, the UE measures and reports on the serving cell(s), listed cells, detected cells, transmission resource pools for V2X sidelink communication, and, for RSSI and channel occupancy measurements, the UE measures and reports on any reception on the indicated frequency. For inter-RAT NR, the UE measures and reports on detected cells and, if configured with MR-DC, on NR serving cell(s) and, for RSSI and channel occupancy measurements, the UE measures and reports on the indicated frequency. For inter-RAT UTRA, the UE measures and reports on listed cells and optionally on cells that are within a range for which reporting is allowed by E-UTRAN. For inter-RAT GERAN, the UE measures and reports on detected cells. For inter-RAT CDMA2000, the UE measures and reports on listed cells. For inter-RAT WLAN, the UE measures and reports on listed cells.

NOTE 2: For inter-RAT UTRA and CDMA2000, the UE measures and reports also on detected cells for the purpose of SON.

NOTE 3: This specification is based on the assumption that typically CSG cells of home deployment type are not indicated within the neighbour list. Furthermore, the assumption is that for non-home deployments, the physical cell identity is unique within the area of a large macro cell (i.e. as for UTRAN).

Whenever the procedural specification, other than contained in subclause 5.5.2, refers to a field it concerns a field included in the *VarMeasConfig* unless explicitly stated otherwise i.e. only the measurement configuration procedure covers the direct UE action related to the received *measConfig*.

*NEXT CHANGE*

5.5.3 Performing measurements

5.5.3.1 General

For all measurements, except for UE Rx–Tx time difference measurements, RSSI, UL PDCP Packet Delay per QCI measurement, UL PDCP Packet Delay Value per DRB measurement, channel occupancy measurements, CBR measurement, sensing measurement and except for WLAN measurements of Band, Carrier Info, Available Admission Capacity, Backhaul Bandwidth, Channel Utilization, and Station Count, the UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria, for measurement reporting or for evaluation of fulfilment of the criteria to trigger conditional reconfiguration execution. When performing measurements on NR carriers, the UE derives the cell quality as specified in 5.5.3.3 and the beam quality as specified in 5.5.3.4.

The UE shall:

1> whenever the UE has a *measConfig*, perform RSRP and RSRQ measurements for each serving cell as follows:

2> for the PCell, apply the time domain measurement resource restriction in accordance with *measSubframePatternPCell,* if configured;

2> if the UE supports CRS based discovery signals measurement:

3> for each SCell in deactivated state, apply the discovery signals measurement timing configuration in accordance with *measDS-Config*, if configured within the *measObject* corresponding to the frequency of the SCell;

1> if the UE has a *measConfig* with *rs-sinr-Config* configured, perform RS-SINR (as indicated in the associated *reportConfig*) measurements as follows:

2> perform the corresponding measurements on the frequency indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to *reportCGI*:

3> if the RAT indicated in the associated *measObject* is not NR:

4> if *si-RequestForHO* is configured for the associated *reportConfig*:

5> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

4> else:

5> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

3> else:

4> if *useAutonomousGapsNR* is configured for the associated *reportConfig*:

5> perform the corresponding measurements on the NR frequency indicated in the associated *measObject* using autonomous gaps as necessary;

4> else:

5> perform the corresponding measurements on the NR frequency indicated in the associated *measObject* using available idle periods;

NOTE 1: If autonomous gaps are used to perform measurements, the UE is allowed to temporarily abort communication with all serving cell(s), i.e. create autonomous gaps to perform the corresponding measurements within the limits specified in TS 36.133 [16]. Otherwise, the UE only supports the measurements with the purpose set to *reportCGI* only if E-UTRAN has provided sufficient idle periods.

3> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

3> if an entry in the *cellAccessRelatedInfoList* includes the selected PLMN, acquire the relevant system information from the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> try to acquire the *trackingAreaCode* in the concerned cell;

4> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

4> if *cellAccessRelatedInfoList* is included, use *trackingAreaCode* and *plmn-IdentityList* from the entry of *cellAccessRelatedInfoList* containing the selected PLMN;

4> if the *includeMultiBandInfo* is configured:

5> try to acquire the *freqBandIndicator* in the *SystemInformationBlockType1*of the concerned cell;

5> try to acquire the list of additional frequency band indicators, as included in the *multiBandInfoList*, if multiple frequency band indicators are included in the *SystemInformationBlockType1*of the concerned cell;

5> try to acquire the *freqBandIndicatorPriority*, if the *freqBandIndicatorPriority* is included in the *SystemInformationBlockType1*of the concerned cell;

4> if *cellAccessRelatedInfoList-5GC* is broadcast in the concerned cell and the UE is E-UTRA/5GC capable:

5> try to acquire the *cellAccessRelatedInfoList-5GC*;

NOTE 2: The 'primary' PLMN is part of the global cell identity.

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

4> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

4> try to acquire the RAC in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *typeHRPD*:

4> try to acquire the Sector ID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *type1XRTT*:

4> try to acquire the BASE ID, SID and NID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *MeasObject* is an NR cell:

4> if the indicated cell is broadcasting *SIB1* (see TS 38.213 [88], clause 13):

5> try to acquire the plmn-IdentityInfoList including plmn-IdentityList, trackingAreaCode (if available), ran-AreaCode (if available) and cellIdentity for each entry of the plmn-IdentityInfoList;

5> try to acquire the frequencyBandList, if multiple frequency bands are broadcasted in the concerned cell;

2> if the *ul-DelayConfig* is configured for the associated *reportConfig*:

3> ignore the *measObject*;

3> configure the PDCP layer to perform UL PDCP Packet Delay per QCI measurement;

2> if the *ul-DelayValueConfig* is configured for the associated *reportConfig*:

3> ignore the *measObject*;

3> configure the PDCP layer to perform UL PDCP Packet Delay value per DRB measurement;

2> else:

3> if a measurement gap configuration is setup; or

3> if the UE does not require measurement gaps to perform the concerned measurements:

4> if *s-Measure* is not configured; or

4> if the UE is not in NE-DC and the PCell RSRP, after layer 3 filtering, is lower than *s-Measure*; or

4> if the UE is in NE-DC and the PSCell RSRP, after layer 3 filtering, is lower than *s-Measure*; or

4> if the associated *measObject* concerns NR; or

4> if *measDS-Config* is configured in the associated *measObject*:

5> if the UE supports CSI-RS based discovery signals measurement; and

5> if the *eventId* in the associated *reportConfig* is set to *eventC1* or *eventC2*, or if *reportStrongestCSI-RSs* is set to *true* in the associated *reportConfig*:

6> perform the corresponding measurements of CSI-RS resources on the frequency indicated in the concerned *measObject*, applying the discovery signals measurement timing configuration in accordance with *measDS-Config* in the concerned *measObject*;

6> if *reportCRS-Meas* is set to *true* in the associated *reportConfig,* perform the corresponding measurements of neighbouring cells on the frequencies indicated in the concerned *measObject* as follows:

7> for neighbouring cells on the primary frequency, apply the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh,* if configured in the concerned *measObject*;

7> apply the discovery signals measurement timing configuration in accordance with *measDS-Config* in the concerned *measObject*;

5> else:

6> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject* as follows:

7> for neighbouring cells on the primary frequency, apply the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh,* if configured in the concerned *measObject*;

7> if the UE supports CRS based discovery signals measurement, apply the discovery signals measurement timing configuration in accordance with *measDS-Config*, if configured in the concerned *measObject*;

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the associated *reportConfig*:

5> perform the UE Rx–Tx time difference measurements on the PCell;

4> if the *reportSSTD-Meas* is set to *true* or *pSCell* in the associated *reportConfig*:

5> perform SSTD measurements between the PCell and the PSCell;

4> if the *reportSFTD-Meas* is set to *pSCell* in the associated *reportConfig*:

5> perform SFTD measurements between the PCell and the NR PSCell;

4> if the *reportSFTD-Meas* is set to *neighborCells* in the associated *reportConfig*:

5> perform SFTD measurements between the PCell and NR cell(s) on the frequency indicated in the associated *measObject*;

4> if the *measRSSI-ReportConfig* is configured in the associated *reportConfig*:

5> perform the RSSI and channel occupancy measurements on the frequency indicated in the associated *measObject*;

2> perform the evaluation of reporting criteria as specified in 5.5.4, except if *reportConfig* is *condReconfigurationTriggerEUTRA* or *condReconfigurationTriggerNR*;

NOTE 2c: The evaluation of conditional reconfiguration execution criteria is specified in 5.3.5.9.4.

The UE capable of CBR measurement when configured to transmit non-P2X related V2X sidelink communication shall:

1> if in coverage on the frequency used for V2X sidelink communication transmission as defined in TS 36.304 [4], clause 11.4; or

1> if the concerned frequency is included in *v2x-InterFreqInfoList* in *RRCConnectionReconfiguration* or in *v2x-InterFreqInfoList* within *SystemInformationBlockType21* or *SystemInformationBlockType26*:

2> if the UE is in RRC\_IDLE:

3> if the concerned frequency is the camped frequency:

4> perform CBR measurement on the pools in *v2x-CommTxPoolNormalCommon* and *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21*;

3> else if *v2x-CommTxPoolNormal* or *v2x-CommTxPoolExceptional* is included in *v2x-InterFreqInfoList* forthe concerned frequency within *SystemInformationBlockType21* or *SystemInformationBlockType26*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormal* and *v2x-CommTxPoolExceptional* in *v2x-InterFreqInfoList* for the concerned frequency in *SystemInformationBlockType21* or *SystemInformationBlockType26*;

3> else if the concerned frequency broadcasts *SystemInformationBlockType21*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormalCommon* and *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21* broadcast on the concerned frequency;

2> if the UE is in RRC\_CONNECTED:

3> if *tx-ResourcePoolToAddList* is included in *VarMeasConfig*:

4> perform CBR measurements on each resource pool indicated in *tx-ResourcePoolToAddList*;

3> if the concerned frequency is the PCell's frequency:

4> perform CBR measurement on the pools in *v2x-CommTxPoolNormalDedicated* or *v2x-SchedulingPool* if included in *RRCConnectionReconfiguration*, *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21* for the concerned frequency and *v2x-CommTxPoolExceptional* if included in *mobilityControlInfoV2X*;

3> else if *v2x-CommTxPoolNormal*, *v2x-SchedulingPool* or *v2x-CommTxPoolExceptional* is included in *v2x-InterFreqInfoList* forthe concerned frequency within *RRCConnectionReconfiguration*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormal, v2x-SchedulingPool,* and *v2x-CommTxPoolExceptional* if included in *v2x-InterFreqInfoList* for the concerned frequency in *RRCConnectionReconfiguration*;

3> else if the concerned frequency broadcasts *SystemInformationBlockType21*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormalCommon* and *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21* for the concerned frequency;

1> else:

2> perform CBR measurement on pools in *v2x-CommTxPoolList* in *SL-V2X-Preconfiguration* for the concerned frequency;

The UE capable of sensing measurement, with *commTxResources* set to *scheduled*, shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if *measSensing-Config* is configured in the associated *measObject*

3> perform the sensing measurement in accordance with TS 36.213 [23] on the pools of *v2x-SchedulingPool* and also indicated in *tx-ResourcePoolToAddList* in the associated *measObject*, using *sensingSubchannelNumber*, *sensingPeriodicity*, *sensingReselectionCounter* and *sensingPriority*.

If a UE that is configured by upper layers to transmit NR sidelink communication is configured by EUTRA with transmission resource pool(s) in *SystemInformationBlockType28* or by *sl-ConfigDedicatedForNR* and the measurements concerning NR sidelink communication (i.e. by *sl-ConfigDedicatedForNR*), it shall perform CBR measurement as specified in subclause 5.5.3 of TS 38.331 [82], based on the transmission resource pool(s) in *SystemInformationBlockType28* or *sl-ConfigDedicatedForNR*.

NOTE 2a: *SIB12* specified in subclause 5.5.3 of TS 38.331 is provided in *SystemInformationBlockType28*.

NOTE 2b: For NR sidelink communication, each of the CBR measurement results is associated with a resource pool, as indicated by the *sl-poolReportIdentity* (see TS 38.331 [82]), that refers to a pool as included in *sl-ConfigDedicatedNR* or *SytemInformationBlockType28*.

NOTE 3: The *s-Measure* defines when the UE is required to perform measurements. The UE is however allowed to perform measurements also when the PCell RSRP (or PSCell RSRP, if the UE is in NE-DC) exceeds *s-Measure*, e.g., to measure cells broadcasting a CSG identity following use of the autonomous search function as defined in TS 36.304 [4].

NOTE 4: The UE may not perform the WLAN measurements it is configured with e.g. due to connection to another WLAN based on user preferences as specified in TS 23.402 [75] or due to turning off WLAN.

NOTE 5: In case the configurations for V2X sidelink communication are acquired from NR, the configurations for V2X sidelink communication in *SystemInformationBlockType21,* *SystemInformationBlockType26, SL-V2X-ConfigDedicated* within *RRCConnectionReconfiguration* used in this subclause can be provided by *SIB13*, *SIB14,* *sl-ConfigDedicatedEUTRA* within *RRCReconfiguration* as specified in TS 38.331 [82], respectively.

*NEXT CHANGE*

5.6.2a UL information transfer for MR-DC

5.6.2a.1 General

****

**Figure 5.6.2a.1-1: UL information transfer MR-DC**

The purpose of this procedure is to transfer from the UE to E-UTRAN MR-DC dedicated information e.g. the NR RRC *MeasurementReport,* the NR RRC *UEAssistanceInformation,* the NR RRC *IABOtherInformation*, NR RRC *FailureInformation* or an NR *RRCReconfigurationComplete* (transmitted upon intra-SN CPC without MN involvement execution if NR *RRCReconfiguration* with *conditionalReconfiguration* for intra-SN CPC without MN involvement was received via SRB1 and the UE is operating in EN-DC) messages.

5.6.2a.2 Initiation

A UE in RRC\_CONNECTED initiates the UL information transfer procedure whenever there is a need to transfer MR DC dedicated information as specified in TS 38.331 [82]. I.e. the procedure is not used during an RRC connection reconfiguration involving NR connection reconfiguration, in which case the MR DC information is piggybacked to the *RRCConnectionReconfigurationComplete* message, except in the case the UE executes an intra-SN Conditional PSCell Change without MN involvement.

*NEXT CHANGE*

### 6.2.2 Message definitions

– *RRCConnectionReconfiguration*

The *RRCConnectionReconfiguration* message is the command to modify an RRC connection. It may convey information for measurement configuration, mobility control, conditional reconfigurations (conditional handover, conditional PSCell addition or inter-SN conditional PSCell change), radio resource configuration (including RBs, MAC main configuration and physical channel configuration) including any associated dedicated NAS information and security configuration.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: E‑UTRAN to UE

***RRCConnectionReconfiguration message***

-- ASN1START

RRCConnectionReconfiguration ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

c1 CHOICE{

rrcConnectionReconfiguration-r8 RRCConnectionReconfiguration-r8-IEs,

spare7 NULL,

spare6 NULL, spare5 NULL, spare4 NULL,

spare3 NULL, spare2 NULL, spare1 NULL

},

criticalExtensionsFuture SEQUENCE {}

}

}

RRCConnectionReconfiguration-r8-IEs ::= SEQUENCE {

measConfig MeasConfig OPTIONAL, -- Need ON

mobilityControlInfo MobilityControlInfo OPTIONAL, -- Cond HO

dedicatedInfoNASList SEQUENCE (SIZE(1..maxDRB)) OF

DedicatedInfoNAS OPTIONAL, -- Cond nonHO

radioResourceConfigDedicated RadioResourceConfigDedicated OPTIONAL, -- Cond HO-toEUTRA

securityConfigHO SecurityConfigHO OPTIONAL, -- Cond HO-toEPC

nonCriticalExtension RRCConnectionReconfiguration-v890-IEs OPTIONAL

}

RRCConnectionReconfiguration-v890-IEs ::= SEQUENCE {

lateNonCriticalExtension OCTET STRING (CONTAINING RRCConnectionReconfiguration-v8m0-IEs) OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v920-IEs OPTIONAL

}

-- Late non-critical extensions:

RRCConnectionReconfiguration-v8m0-IEs ::= SEQUENCE {

-- Following field is only for pre REL-10 late non-critical extensions

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v10i0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v10i0-IEs ::= SEQUENCE {

antennaInfoDedicatedPCell-v10i0 AntennaInfoDedicated-v10i0 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v10l0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v10l0-IEs ::= SEQUENCE {

mobilityControlInfo-v10l0 MobilityControlInfo-v10l0 OPTIONAL,

sCellToAddModList-v10l0 SCellToAddModList-v10l0 OPTIONAL, -- Need ON

-- Following field is only for late non-critical extensions from REL-10 to REL-11

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v12f0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v12f0-IEs ::= SEQUENCE {

scg-Configuration-v12f0 SCG-Configuration-v12f0 OPTIONAL, -- Cond nonFullConfig

-- Following field is only for late non-critical extensions from REL-12

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v1370-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1370-IEs ::= SEQUENCE {

radioResourceConfigDedicated-v1370 RadioResourceConfigDedicated-v1370 OPTIONAL, -- Need ON

sCellToAddModListExt-v1370 SCellToAddModListExt-v1370 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v13c0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v13c0-IEs ::= SEQUENCE {

radioResourceConfigDedicated-v13c0 RadioResourceConfigDedicated-v13c0 OPTIONAL, -- Need ON

sCellToAddModList-v13c0 SCellToAddModList-v13c0 OPTIONAL, -- Need ON

sCellToAddModListExt-v13c0 SCellToAddModListExt-v13c0 OPTIONAL, -- Need ON

scg-Configuration-v13c0 SCG-Configuration-v13c0 OPTIONAL, -- Need ON

-- Following field is only for late non-critical extensions from REL-13 onwards

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non-critical extensions:

RRCConnectionReconfiguration-v920-IEs ::= SEQUENCE {

otherConfig-r9 OtherConfig-r9 OPTIONAL, -- Need ON

fullConfig-r9 ENUMERATED {true} OPTIONAL, -- Cond HO-Reestab

nonCriticalExtension RRCConnectionReconfiguration-v1020-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1020-IEs ::= SEQUENCE {

sCellToReleaseList-r10 SCellToReleaseList-r10 OPTIONAL, -- Need ON

sCellToAddModList-r10 SCellToAddModList-r10 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1130-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1130-IEs ::= SEQUENCE {

systemInformationBlockType1Dedicated-r11 OCTET STRING (CONTAINING SystemInformationBlockType1) OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1250-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1250-IEs ::= SEQUENCE {

wlan-OffloadInfo-r12 CHOICE {

release NULL,

setup SEQUENCE {

wlan-OffloadConfigDedicated-r12 WLAN-OffloadConfig-r12,

t350-r12 ENUMERATED {min5, min10, min20, min30, min60,

min120, min180, spare1} OPTIONAL -- Need OR

}

} OPTIONAL, -- Need ON

scg-Configuration-r12 SCG-Configuration-r12 OPTIONAL, -- Cond nonFullConfig

sl-SyncTxControl-r12 SL-SyncTxControl-r12 OPTIONAL, -- Need ON

sl-DiscConfig-r12 SL-DiscConfig-r12 OPTIONAL, -- Need ON

sl-CommConfig-r12 SL-CommConfig-r12 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1310-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1310-IEs ::= SEQUENCE {

sCellToReleaseListExt-r13 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellToAddModListExt-r13 SCellToAddModListExt-r13 OPTIONAL, -- Need ON

lwa-Configuration-r13 LWA-Configuration-r13 OPTIONAL, -- Need ON

lwip-Configuration-r13 LWIP-Configuration-r13 OPTIONAL, -- Need ON

rclwi-Configuration-r13 RCLWI-Configuration-r13 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1430-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1430-IEs ::= SEQUENCE {

sl-V2X-ConfigDedicated-r14 SL-V2X-ConfigDedicated-r14 OPTIONAL, -- Need ON

sCellToAddModListExt-v1430 SCellToAddModListExt-v1430 OPTIONAL, -- Need ON

perCC-GapIndicationRequest-r14 ENUMERATED{true} OPTIONAL, -- Need ON

systemInformationBlockType2Dedicated-r14 OCTET STRING (CONTAINING SystemInformationBlockType2) OPTIONAL, -- Cond nonHO

nonCriticalExtension RRCConnectionReconfiguration-v1510-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1510-IEs ::= SEQUENCE {

nr-Config-r15 CHOICE {

release NULL,

setup SEQUENCE {

endc-ReleaseAndAdd-r15 BOOLEAN,

nr-SecondaryCellGroupConfig-r15 OCTET STRING OPTIONAL, -- Need ON

p-MaxEUTRA-r15 P-Max OPTIONAL -- Need ON

}

} OPTIONAL, -- Need ON

sk-Counter-r15 INTEGER (0.. 65535) OPTIONAL, -- Need ON

nr-RadioBearerConfig1-r15 OCTET STRING OPTIONAL, -- Need ON

nr-RadioBearerConfig2-r15 OCTET STRING OPTIONAL, -- Need ON

tdm-PatternConfig-r15 TDM-PatternConfig-r15 OPTIONAL, -- Cond FDD-PCell

nonCriticalExtension RRCConnectionReconfiguration-v1530-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1530-IEs ::= SEQUENCE {

securityConfigHO-v1530 SecurityConfigHO-v1530 OPTIONAL, -- Cond HO-5GC

sCellGroupToReleaseList-r15 SCellGroupToReleaseList-r15 OPTIONAL, -- Need ON

sCellGroupToAddModList-r15 SCellGroupToAddModList-r15 OPTIONAL, -- Need ON

dedicatedInfoNASList-r15 SEQUENCE (SIZE(1..maxDRB-r15)) OF

DedicatedInfoNAS OPTIONAL, -- Cond nonHO

p-MaxUE-FR1-r15 P-Max OPTIONAL, -- Need OR

smtc-r15 MTC-SSB-NR-r15 OPTIONAL, -- Need OP

nonCriticalExtension RRCConnectionReconfiguration-v1610-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1610-IEs ::= SEQUENCE {

conditionalReconfiguration-r16 ConditionalReconfiguration-r16 OPTIONAL, -- Need ON

daps-SourceRelease-r16 ENUMERATED{true} OPTIONAL, -- Need ON

tdm-PatternConfig2-r16 TDM-PatternConfig-r15 OPTIONAL, -- Need ON

sl-ConfigDedicatedForNR-r16 OCTET STRING OPTIONAL, -- Need OR

sl-SSB-PriorityEUTRA-r16 INTEGER (1..8) OPTIONAL, -- Need OR

nonCriticalExtension SEQUENCE {} OPTIONAL

}

SL-SyncTxControl-r12 ::= SEQUENCE {

networkControlledSyncTx-r12 ENUMERATED {on, off} OPTIONAL -- Need OP

}

PSCellToAddMod-r12 ::= SEQUENCE {

sCellIndex-r12 SCellIndex-r10,

cellIdentification-r12 SEQUENCE {

physCellId-r12 PhysCellId,

dl-CarrierFreq-r12 ARFCN-ValueEUTRA-r9

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonPSCell-r12 RadioResourceConfigCommonPSCell-r12 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedPSCell-r12 RadioResourceConfigDedicatedPSCell-r12 OPTIONAL, -- Cond SCellAdd2

...,

[[ antennaInfoDedicatedPSCell-v1280 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

]],

[[ sCellIndex-r13 SCellIndex-r13 OPTIONAL -- Need ON

]],

[[ radioResourceConfigDedicatedPSCell-v1370 RadioResourceConfigDedicatedPSCell-v1370 OPTIONAL -- Need ON

]],

[[ radioResourceConfigDedicatedPSCell-v13c0 RadioResourceConfigDedicatedPSCell-v13c0 OPTIONAL -- Need ON

]]

}

PSCellToAddMod-v12f0 ::= SEQUENCE {

radioResourceConfigCommonPSCell-r12 RadioResourceConfigCommonPSCell-v12f0 OPTIONAL

}

PSCellToAddMod-v1440 ::= SEQUENCE {

radioResourceConfigCommonPSCell-r14 RadioResourceConfigCommonPSCell-v1440 OPTIONAL

}

PowerCoordinationInfo-r12 ::= SEQUENCE {

p-MeNB-r12 INTEGER (1..16),

p-SeNB-r12 INTEGER (1..16),

powerControlMode-r12 INTEGER (1..2)

}

SCellToAddModList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellToAddMod-r10

SCellToAddModList-v10l0 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellToAddMod-v10l0

SCellToAddModList-v13c0 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellToAddMod-v13c0

SCellToAddModList-r16 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddMod-r16

SCellToAddModListExt-r13 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddModExt-r13

SCellToAddModListExt-v1370 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddModExt-v1370

SCellToAddModListExt-v13c0 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddMod-v13c0

SCellToAddModListExt-v1430 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddModExt-v1430

SCellGroupToAddModList-r15 ::= SEQUENCE (SIZE (1..maxSCellGroups-r15)) OF SCellGroupToAddMod-r15

SCellToAddMod-r10 ::= SEQUENCE {

sCellIndex-r10 SCellIndex-r10,

cellIdentification-r10 SEQUENCE {

physCellId-r10 PhysCellId,

dl-CarrierFreq-r10 ARFCN-ValueEUTRA

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonSCell-r10 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedSCell-r10 RadioResourceConfigDedicatedSCell-r10 OPTIONAL, -- Cond SCellAdd2

...,

[[ dl-CarrierFreq-v1090 ARFCN-ValueEUTRA-v9e0 OPTIONAL -- Cond EARFCN-max

]],

[[ antennaInfoDedicatedSCell-v10i0 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

]],

[[ srs-SwitchFromServCellIndex-r14 INTEGER (0.. 31) OPTIONAL -- Need ON

]],

[[ sCellState-r15 ENUMERATED {activated, dormant} OPTIONAL -- Need ON

]]

}

SCellToAddMod-v10l0 ::= SEQUENCE {

radioResourceConfigCommonSCell-v10l0 RadioResourceConfigCommonSCell-v10l0 OPTIONAL

}

SCellToAddMod-v13c0 ::= SEQUENCE {

radioResourceConfigDedicatedSCell-v13c0 RadioResourceConfigDedicatedSCell-v13c0 OPTIONAL

}

SCellToAddMod-r16 ::= SEQUENCE {

sCellIndex-r16 SCellIndex-r13,

cellIdentification-r16 SEQUENCE {

physCellId-r16 PhysCellId,

dl-CarrierFreq-r16 ARFCN-ValueEUTRA-r9

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonSCell-r16 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedSCell-r16 RadioResourceConfigDedicatedSCell-r10 OPTIONAL, -- Cond SCellAdd2

antennaInfoDedicatedSCell-r16 AntennaInfoDedicated-v10i0 OPTIONAL, -- Need ON

srs-SwitchFromServCellIndex-r16 INTEGER (0.. 31) OPTIONAL, -- Need ON

sCellState-r16 ENUMERATED {activated, dormant} OPTIONAL, -- Need ON

...

}

SCellToAddModExt-r13 ::= SEQUENCE {

sCellIndex-r13 SCellIndex-r13,

cellIdentification-r13 SEQUENCE {

physCellId-r13 PhysCellId,

dl-CarrierFreq-r13 ARFCN-ValueEUTRA-r9

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonSCell-r13 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedSCell-r13 RadioResourceConfigDedicatedSCell-r10 OPTIONAL, -- Cond SCellAdd2

antennaInfoDedicatedSCell-r13 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

}

SCellToAddModExt-v1370 ::= SEQUENCE {

radioResourceConfigCommonSCell-v1370 RadioResourceConfigCommonSCell-v10l0 OPTIONAL

}

SCellToAddModExt-v1430 ::= SEQUENCE {

srs-SwitchFromServCellIndex-r14 INTEGER (0.. 31) OPTIONAL, -- Need ON

...,

[[ sCellState-r15 ENUMERATED {activated, dormant} OPTIONAL -- Need ON

]]

}

SCellGroupToAddMod-r15 ::= SEQUENCE {

sCellGroupIndex-r15 SCellGroupIndex-r15,

sCellConfigCommon-r15 SCellConfigCommon-r15 OPTIONAL, -- Need ON

sCellToReleaseList-r15 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellToAddModList-r15 SCellToAddModListExt-r13 OPTIONAL -- Need ON

}

SCellToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellIndex-r10

SCellToReleaseListExt-r13 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellIndex-r13

SCellGroupToReleaseList-r15 ::= SEQUENCE (SIZE (1..maxSCellGroups-r15)) OF SCellGroupIndex-r15

SCellGroupIndex-r15 ::= INTEGER (1..maxSCellGroups-r15)

SCellConfigCommon-r15 ::= SEQUENCE {

radioResourceConfigCommonSCell-r15 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Need ON

radioResourceConfigDedicatedSCell-r15 RadioResourceConfigDedicatedSCell-r10 OPTIONAL,-- Need ON

antennaInfoDedicatedSCell-r15 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

}

SCG-Configuration-r12 ::= CHOICE {

release NULL,

setup SEQUENCE {

scg-ConfigPartMCG-r12 SEQUENCE {

scg-Counter-r12 INTEGER (0.. 65535) OPTIONAL, -- Need ON

powerCoordinationInfo-r12 PowerCoordinationInfo-r12 OPTIONAL, -- Need ON

...

} OPTIONAL, -- Need ON

scg-ConfigPartSCG-r12 SCG-ConfigPartSCG-r12 OPTIONAL -- Need ON

}

}

SCG-Configuration-v12f0 ::= CHOICE {

release NULL,

setup SEQUENCE {

scg-ConfigPartSCG-v12f0 SCG-ConfigPartSCG-v12f0 OPTIONAL -- Need ON

}

}

SCG-Configuration-v13c0 ::= CHOICE {

release NULL,

setup SEQUENCE {

scg-ConfigPartSCG-v13c0 SCG-ConfigPartSCG-v13c0 OPTIONAL -- Need ON

}

}

SCG-ConfigPartSCG-r12 ::= SEQUENCE {

radioResourceConfigDedicatedSCG-r12 RadioResourceConfigDedicatedSCG-r12 OPTIONAL, -- Need ON

sCellToReleaseListSCG-r12 SCellToReleaseList-r10 OPTIONAL, -- Need ON

pSCellToAddMod-r12 PSCellToAddMod-r12 OPTIONAL, -- Need ON

sCellToAddModListSCG-r12 SCellToAddModList-r10 OPTIONAL, -- Need ON

mobilityControlInfoSCG-r12 MobilityControlInfoSCG-r12 OPTIONAL, -- Need ON

...,

[[

sCellToReleaseListSCG-Ext-r13 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellToAddModListSCG-Ext-r13 SCellToAddModListExt-r13 OPTIONAL -- Need ON

]],

[[

sCellToAddModListSCG-Ext-v1370 SCellToAddModListExt-v1370 OPTIONAL -- Need ON

]],

[[

pSCellToAddMod-v1440 PSCellToAddMod-v1440 OPTIONAL -- Need ON

]],

[[ sCellGroupToReleaseListSCG-r15 SCellGroupToReleaseList-r15 OPTIONAL, -- Need ON

sCellGroupToAddModListSCG-r15 SCellGroupToAddModList-r15 OPTIONAL -- Need ON

]],

[[ -- NE-DC addition for setup/ modification and release SN configured measurements

measConfigSN-r15 MeasConfig OPTIONAL, -- Need ON

-- NE-DC additions concerning DRBs/ SRBs are within RadioResourceConfigDedicatedSCG

tdm-PatternConfigNE-DC-r15 TDM-PatternConfig-r15 OPTIONAL -- Cond FDD-PSCell

]],

[[ p-MaxEUTRA-r15 P-Max OPTIONAL -- Need ON

]]

}

SCG-ConfigPartSCG-v12f0 ::= SEQUENCE {

pSCellToAddMod-v12f0 PSCellToAddMod-v12f0 OPTIONAL, -- Need ON

sCellToAddModListSCG-v12f0 SCellToAddModList-v10l0 OPTIONAL -- Need ON

}

SCG-ConfigPartSCG-v13c0 ::= SEQUENCE {

sCellToAddModListSCG-v13c0 SCellToAddModList-v13c0 OPTIONAL, -- Need ON

sCellToAddModListSCG-Ext-v13c0 SCellToAddModListExt-v13c0 OPTIONAL -- Need ON

}

SecurityConfigHO ::= SEQUENCE {

handoverType CHOICE {

intraLTE SEQUENCE {

securityAlgorithmConfig SecurityAlgorithmConfig OPTIONAL, -- Cond fullConfig

keyChangeIndicator BOOLEAN,

nextHopChainingCount NextHopChainingCount

},

interRAT SEQUENCE {

securityAlgorithmConfig SecurityAlgorithmConfig,

nas-SecurityParamToEUTRA OCTET STRING (SIZE(6))

}

},

...

}

SecurityConfigHO-v1530 ::= SEQUENCE {

handoverType-v1530 CHOICE {

intra5GC-r15 SEQUENCE {

securityAlgorithmConfig-r15 SecurityAlgorithmConfig OPTIONAL, -- Cond HO-toEUTRA

keyChangeIndicator-r15 BOOLEAN,

nextHopChainingCount-r15 NextHopChainingCount,

nas-Container-r15 OCTET STRING OPTIONAL -- Need ON

},

fivegc-ToEPC-r15 SEQUENCE {

securityAlgorithmConfig-r15 SecurityAlgorithmConfig,

nextHopChainingCount-r15 NextHopChainingCount

},

epc-To5GC-r15 SEQUENCE {

securityAlgorithmConfig-r15 SecurityAlgorithmConfig,

nas-Container-r15 OCTET STRING

}

},

...

}

-- ASN1STOP

| ***RRCConnectionReconfiguration* field descriptions** |
| --- |
| ***conditionalReconfiguration***  This field is used to configure the UE with a conditional reconfiguration. The reconfiguration is applied when the execution condition(s) is fulfilled. The field is absent if *daps-HO* is configured for any DRB or if *MobilityControlInfo* is included in the *RRCConnectionReconfiguration* message. The *conditionalReconfiguration* is not configured in the *RRCConnectionReconfiguration* message included in a *conditionalReconfiguration.* |
| ***daps-SourceRelease***  A one-shot field that indicates that the UE shall release the resources associated with source PCell at a DAPS HO, including reconfiguration of the PDCP entity to release DAPS. |
| ***dedicatedInfoNASList***  This field is used to transfer UE specific NAS layer information between the network and the UE. The RRC layer is transparent for each PDU in the list. If *dedicatedInfoNASList-r15* is present, UE shall ignore the *dedicatedInfoNASList* (without suffix). |
| ***endc-ReleaseAndAdd***  A one-shot field indicating whether the UE simultaneously releases and adds all the NR SCG related configuration within *nr-Config*, i.e. the configuration set by the NR *RRCReconfiguration* message (e.g. *secondaryCellGroup, SRB3* and *measConfig)*. |
| ***fullConfig***  Indicates the full configuration option is applicable for the RRC Connection Reconfiguration message for intra-system intra-RAT handover. For inter-RAT handover from NR to E-UTRA, *fullConfig* indicates whether or not delta signalling of SDAP/PDCP from source RAT is applicable. This field is absent when the *RRCConnectionReconfiguration* message is generated by the E-UTRA SCG. |
| ***keyChangeIndicator***  If UE is connected to EPC, true is used only in an intra-cell handover when a KeNB key is derived from a KASME key taken into use through the latest successful NAS SMC procedure, as described in TS 33.401 [32] for KeNB re-keying. false is used in an intra-LTE handover when the new KeNB key is obtained from the current KeNB key or from the NH as described in TS 33.401 [32].  If UE is connected to 5GC, with keyChangeIndicator-r15, true is used in an intra-cell handover when a KeNB key is derived from a KAMF key taken into use through the latest successful NAS SMC procedure, as described in TS 33.501 [86] for KeNB re-keying.  False is used for intra-system handover when the new KeNB key is obtained from the current KeNB key or from the NH as described in TS 33.501 [86]. True is also used in NG based handover procedure with KAMF change, when a KeNB key is derived from the new KAMF key as described in TS 33.501 [86]. |
| ***lwa-Configuration***  This field is used to provide parameters for LWA configuration. E-UTRAN does not simultaneously configure LWA with DC, LWIP or RCLWI for a UE. |
| ***lwip-Configuration***  This field is used to provide parameters for LWIP configuration. E-UTRAN does not simultaneously configure LWIP with DC, LWA or RCLWI for a UE. |
| ***measConfig***  Measurements that E-UTRAN may configure when the UE is not configured with NE-DC. |
| ***measConfigSN***  Measurements that E-UTRAN may configure when the UE is configured with NE-DC and for which reports are carried within an NR RRC message. |
| ***nas-Container***  This field is used to transfer UE specific NAS layer information between the network and the UE. The RRC layer is transparent for this field, although, if included, it affects activation of AS- security after handover within E-UTRA/5GC. The content is defined in TS 24.501 [95]. In case of NG based handover, the content of nas-Container is. the Intra N1 mode NAS transparent container IE. In case of inter-system handover to from 5GS to EPS, the content of NAS-Container is. the S1 mode to N1 mode NAS transparent container IE. |
| ***nas-securityParamToEUTRA***  This field is used to transfer UE specific NAS layer information between the network and the UE. The RRC layer is transparent for this field, although, if included, it affects activation of AS- security after inter-RAT handover to E-UTRA/EPC or inter-system handover to E-UTRA/EPC. The content is defined in TS 24.301 [35]. This field is not used for handover from 5GC. |
| ***networkControlledSyncTx***  This field indicates whether the UE shall transmit synchronisation information (i.e. become synchronisation source). Value *On* indicates the UE to transmit synchronisation information while value *Off* indicates the UE to not transmit such information. |
| ***nextHopChainingCount***  Parameter NCC: See TS 33.401 [32] if UE is connected to EPC, else see 33.501 [86] if UE is connected to 5GC. |
| ***nr-Config***  Includes the NR related configurations. This field is used to configure (NG)EN-DC configuration, possibly in conjunction with fields *sk-Counter* and *nr-RadioBearerConfig1/ 2*. NOTE 1. |
| ***nr-RadioBearerConfig1, nr-RadioBearerConfig2***  Includes the NR *RadioBearerConfig* IE as specified in TS 38.331 [82]. The field includes the configuration of RBs configured with NR PDCP. |
| ***nr-SecondaryCellGroupConfig***  Includes the NR *RRCReconfiguration* message as specified in TS 38.331 [82]. In this version of the specification, the NR RRC message only includes fields *secondaryCellGroup, conditionalReconfiguration, otherConfig, bap-Config, iab-IP-AddressConfigurationList* and/ or *measConfig*. If *nr-SecondaryCellGroupConfig* is configured, the network always includes this field upon MN handover to initiate an NR SCG reconfiguration with sync and key change. |
| ***perCC-GapIndicationRequest***  Indicates that UE shall include *perCC-GapIndicationList* and *numFreqEffective* in the *RRCConnectionReconfigurationComplete* message. *numFreqEffectiveReduced* may also be included if frequencies are configured for reduced measurement performance. |
| ***p-MaxEUTRA***  Indicates the maximum power available for LTE. |
| ***p-MaxUE-FR1***  The maximum total transmit power to be used by the UE across all serving cells in frequency range 1 (FR1) across all cell groups. The maximum transmit power that the UE may use may be additionally limited on cell- or cell-group level. The field is optionally present, if (NG)EN-DC (nr-Config-r15) has been configured. It is absent otherwise. |
| ***p-MeNB***  Indicates the guaranteed power for the MeNB, as specified in TS 36.213 [23]. The value N corresponds to N-1 in TS 36.213 [23]. |
| ***powerControlMode***  Indicates the power control mode used in DC. Value 1 corresponds to DC power control mode 1 and value 2 indicates DC power control mode 2, as specified in TS 36.213 [23]. |
| ***p-SeNB***  Indicates the guaranteed power for the SeNB as specified in TS 36.213 [23], Table 5.1.4.2-1. The value N corresponds to N-1 in TS 36.213 [23]. |
| ***rclwi-Configuration***  WLAN traffic steering command as specified in 5.6.16.2. E-UTRAN does not simultaneously configure RCLWI with DC, LWA or LWIP for a UE. |
| ***sCellConfigCommon***  Indicates the common configuration for the SCell group. |
| ***sCellGroupIndex***  Indicates the identity of SCell groups for which a common configuration is provided. |
| ***sCellIndex***  The *sCellIndex* is unique within the scope of the UE. In case of DC, an SCG cell can not use the same value as used for an MCG cell. For *pSCellToAddMod*, if *sCellIndex-r13* is present the UE shall ignore *sCellIndex-r12.* |
| ***sCellGroupToAddModList, sCellGroupToAddModListSCG***  Indicates the SCell group to be added or modified. E-UTRAN only configures at most 4 SCell groups per UE over all cell groups. SCell groups can only be configured for LTE SCells, and all SCells in an SCell group must belong to the same cell group. |
| ***sCellGroupToReleaseList***  Indicates the SCell group to be released. |
| ***sCellState***  A one-shot field that indicates whether the SCell shall be considered to be in activated or dormant state upon SCell configuration. |
| ***sCellToAddModList, sCellToAddModListExt***  Indicates the SCell to be added or modified. E-UTRAN uses field *sCellToAddModList-r10* to add or modify SCells (with *sCellIndex-r10*) for a UE that does not support carrier aggregation with more than 5 component carriers. If E-UTRAN includes *sCellToAddModListExt-v1430* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListExt-r13*. If E-UTRAN includes *sCellToAddModList-v10l0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModList-r10*. If E-UTRAN includes *sCellToAddModListExt-v1370* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListExt-r13*. If E-UTRAN includes *sCellToAddModListExt-v13c0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListExt-r13.* |
| ***sCellToAddModListSCG, sCellToAddModListSCG-Ext***  Indicates the SCG cell to be added or modified. The field is used for SCG cells other than the PSCell (which is added/ modified by field *pSCellToAddMod*). E-UTRAN uses field *sCellToAddModListSCG-r12* to add or modify SCells (with *sCellIndex-r10*) for a UE that does not support carrier aggregation with more than 5 component carriers. If E-UTRAN includes *sCellToAddModListSCG-v10l0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListSCG-r12*. If E-UTRAN includes *sCellToAddModListSCG-Ext-v1370* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListSCG-Ext-r13*. If E-UTRAN includes *sCellToAddModListSCG-Ext-v13c0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListSCG-Ext-r13.* |
| ***sCellToReleaseList, sCellToReleaseListExt***  Indicates the SCell to be released. E-UTRAN uses field *sCellToReleaseList-r10* to release SCells for a UE that does not support carrier aggregation with more than 5 component carriers. |
| ***sCellToReleaseListSCG, sCellToReleaseListSCG-Ext***  Indicates the SCG cell to be released. The field is also used to release the PSCell e.g. upon change of PSCell, upon system information change for the PSCell. E-UTRAN uses field *sCellToReleaseListSCG-r12* to release SCells for a UE that does not support carrier aggregation with more than 5 component carriers. |
| ***scg-Configuration***  Covers the SCG configuration as used in case of DC and NE-DC. When the UE is configured with NE-DC, E-UTRAN neither applies value release nor configures *scg-ConfigPartMCG*. When resuming a connection with NE-DC, this field is included, containing at least the *mobilityControlInfoSCG*. |
| ***scg-Counter***  A counter used upon initial configuration of SCG security as well as upon refresh of S-KeNB. E-UTRAN includes the field upon SCG change when one or more SCG DRBs are configured. Otherwise E-UTRAN does not include the field. |
| ***securityConfigHO***  This field contains the parameters required to update the security keys at handover. If E-UTRAN includes the *securityConfigHO* (i.e., without suffix), the choice *intraLTE* is used for handover within E-UTRA/EPC while the choice *interRAT* is used for handover from GERAN or UTRAN to E-UTRA/EPC. If E-UTRAN includes the *securityConfigHO-v1530* (i.e., with suffix), the choice *intra5GC* is used for handover from NR or E-UTRA/5GC to E-UTRA/5GC while the choice *fivegc-ToEPC* is used for inter-system handover from NR or E-UTRA/5GC to E-UTRA/EPC and the choice *epc-To5GC* is used for inter-system handover from E-UTRA/EPC to E-UTRA/5GC. |
| ***sk-Counter***  A one-shot counter used upon initial configuration of S-KgNB as well as upon refresh of S-KgNB. E-UTRAN always provides this field either upon initial configuration of an NR SCG, or upon configuration of the first (SN terminated) RB using S-KgNB, whichever happens first. |
| ***sl-ConfigDedicatedForNR***  Container for providing the dedicated configurations for NR sidelink communication, the octet string contains the NR *RRCReconfiguration* message as specified in TS 38.331 [82]. In this version of the specification, the NR RRC message only includes fields related to NR sidelink communication, i.e. *sl-ConfigDedicatedNR*, *measConfig* and/or *otherConfig*. If the UE is configured by the current Pcell with *sl-ScheduledConfig* set to setup (i.e., NR sidelink communication mode 1), the network only includes *sl-PrioritizationThres* and *sl-ConfiguredGrantConfig* that only includes the configurations of configured sidelink grant Type 1 in the field *sl-ScheduledConfig*. |
| ***sl-SSB-PriorityEUTRA***  Indicates the priority of LTE PSSS/SSSS/PSBCH transmission and reception. NOTE 3. |
| ***sl-V2X-ConfigDedicated***  Indicates sidelink configuration for non-P2X related V2X sidelink communication as well as P2X related V2X sidelink communication. |
| ***smtc***  The SSB periodicity/offset/duration configuration of target cell for NR PSCell addition and SN change. It is based on timing reference of EUTRA PCell. NOTE 2.  If the field is absent, the UE uses the SMTC in the *measObjectNR* having the same SSB frequency and subcarrier spacing, as configured before the reception of the RRC message. |
| ***srs-SwitchFromServCellIndex***  Indicates the serving cell whose UL transmission may be interrupted during SRS transmission on a PUSCH-less cell. During SRS transmission on a PUSCH-less cell, the UE may temporarily suspend the UL transmission on a serving cell with PUSCH in the same CG to allow the PUSCH-less cell to transmit SRS. The PUSCH-less cell is always a TDD cell but the serving cell with PUSCH may be either a FDD or TDD cell. |
| ***systemInformationBlockType1Dedicated***  This field is used to transfer *SystemInformationBlockType1* or *SystemInformationBlockType1-BR* to the UE. |
| ***systemInformationBlockType2Dedicated***  This field is used to transfer BR version of *SystemInformationBlockType2* to BL UEs or UEs in CE or *SystemInformationBlockType2* to non-BL UEs. |
| ***t350***  Timer T350 as described in clause 7.3. Value *minN* corresponds to N minutes. |
| ***tdm-PatternConfig***  This field is used when power control or IMD issues require single UL transmission in (NG)EN-DC as specified in TS 38.101-3 [101] and TS 38.213 [88]. |
| ***tdm-PatternConfig2***  This field is used for dual UL transmission in EN-DC with LTE FDD PCell and for single UL transmission in EN-DC with LTE FDD/TDD PCell, as specified in TS 38.101-3 [101] and TS 38.213 [88].  The network sets at most one of *tdm-PatternConfig* and *tdm-PatternConfig2* to setup.  When this field is configured in EN-DC with LTE TDD PCell, it is not applicable if TDD configuration is sa0 or sa6 in SIB1. |
| ***tdm-PatternConfigNE-DC***  This field is used when power control or IMD issues require single UL transmission in NE-DC as specified in TS 38.101-3 [101] and TS 38.213 [88]. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *EARFCN-max* | The field is mandatory present if *dl-CarrierFreq-r10* is included and set to *maxEARFCN*. Otherwise the field is not present. |
| *FDD-PCell* | This field is optionally present, need ON, for a FDD PCell if there is no SCell with configured uplink. Otherwise, the field is not present. |
| *FDD-PSCell* | This field is optionally present, need ON, for a FDD PSCell if there is no SCell with configured uplink. Otherwise, the field is not present. |
| *fullConfig* | This field is mandatory present for handover within E-UTRA when the *fullConfig* is included; otherwise it is optionally present, Need OP. |
| *HO* | The field is mandatory present in case of handover within E-UTRA or to E-UTRA; otherwise the field is not present. The field is not present if source PCell resources after a DAPS handover have not been released. |
| *HO-Reestab* | The field is mandatory present in case of inter-system handover within E-UTRA or handover from NR to E-UTRA/EPC; it is optionally present, need ON, in case of intra-system handover within E-UTRA or upon the first reconfiguration after RRC connection re-establishment; or for intra-system handover from NR to E-UTRA, otherwise the field is not present. |
| *HO-5GC* | The field is mandatory present in case of handover within E-UTRA/5GC, handover to E-UTRA/5GC, handover from NR to E-UTRA/EPC, or handover from E-UTRA/5GC to E-UTRA/EPC, otherwise the field is not present. |
| *HO-toEPC* | The field is mandatory present in case of handover within E-UTRA/EPC or to E-UTRA/EPC, except handover from NR or E-UTRA/5GC, otherwise the field is not present. |
| *HO-toEUTRA* | The field is mandatory present in case of handover to E-UTRA or for reconfigurations when *fullConfig* is included; otherwise the field is optionally present, need ON. |
| *nonFullConfig* | The field is not present when the *fullConfig* is included or in case of handover to E-UTRA; otherwise it is optional present, need ON. |
| *nonHO* | The field is not present in case of handover within E-UTRA or to E-UTRA; otherwise it is optional present, need ON. |
| *SCellAdd* | The field is mandatory present upon SCell addition; otherwise it is not present. |
| *SCellAdd2* | The field is mandatory present upon SCell addition; otherwise it is optionally present, need ON. |

NOTE 1: Fields *sk-Counter* and *nr-RadioBearerConfig1/ 2* are placed outside *nr-Config*, as these may be configured while the UE is not configured with (NG)EN-DC.

NOTE 2: It is not specified whether the timing reference for the SMTC configuration is the source EUTRA PCell or the target EUTRA PCell in case the NR PSCell addition or SN change takes place simultaneously with handover. As a consequence, explicit SMTC configuration is only supported when the source EUTRA PCell and the target EUTRA PCell of the handover are SFN/subframe-synchronized.

NOTE 3: For UEs in RRC\_IDLE, RRC\_INACTIVE or out-of coverage, and for the case that *sl-SSB-PriorityEUTRA* is absent, it is up to UE implementation to decide the priority of LTE PSSS/SSSS/PSBCH transmission and reception.

– *RRCConnectionReconfigurationComplete*

The *RRCConnectionReconfigurationComplete* message is used to confirm the successful completion of an RRC connection reconfiguration.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to E‑UTRAN

***RRCConnectionReconfigurationComplete message***

-- ASN1START

RRCConnectionReconfigurationComplete ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

rrcConnectionReconfigurationComplete-r8

RRCConnectionReconfigurationComplete-r8-IEs,

criticalExtensionsFuture SEQUENCE {}

}

}

RRCConnectionReconfigurationComplete-r8-IEs ::= SEQUENCE {

nonCriticalExtension RRCConnectionReconfigurationComplete-v8a0-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v8a0-IEs ::= SEQUENCE {

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v1020-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v1020-IEs ::= SEQUENCE {

rlf-InfoAvailable-r10 ENUMERATED {true} OPTIONAL,

logMeasAvailable-r10 ENUMERATED {true} OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v1130-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v1130-IEs ::= SEQUENCE {

connEstFailInfoAvailable-r11 ENUMERATED {true} OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v1250-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v1250-IEs ::= SEQUENCE {

logMeasAvailableMBSFN-r12 ENUMERATED {true} OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v1430-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v1430-IEs ::= SEQUENCE {

perCC-GapIndicationList-r14 PerCC-GapIndicationList-r14 OPTIONAL,

numFreqEffective-r14 INTEGER (1..12) OPTIONAL,

numFreqEffectiveReduced-r14 INTEGER (1..12) OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v1510-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v1510-IEs ::= SEQUENCE {

scg-ConfigResponseNR-r15 OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v1530-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v1530-IEs ::= SEQUENCE {

logMeasAvailableBT-r15 ENUMERATED {true} OPTIONAL,

logMeasAvailableWLAN-r15 ENUMERATED {true} OPTIONAL,

flightPathInfoAvailable-r15 ENUMERATED {true} OPTIONAL,

nonCriticalExtension RRCConnectionReconfigurationComplete-v17xy-IEs OPTIONAL

}

RRCConnectionReconfigurationComplete-v17xy-IEs ::= SEQUENCE {

selectedCondReconfigurationToApply-r17 CondReconfigurationId-r16 OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- ASN1STOP

| ***RRCConnectionReconfigurationComplete* field descriptions** |
| --- |
| ***numFreqEffective***  This field is used to indicate the number of effective frequencies that a UE measures in series according to TS 36.133 [16]. Simultaneous measurement in parallel on multiple frequencies can be equivalent to a single effective frequency. The frequencies configured for reduced measurement performance should not be included. |
| ***numFreqEffectiveReduced***  This field is used to indicate the number of effective frequencies that a UE measures in series according to TS 36.133 [16] for frequencies configured for reduced measurement performance. Simultaneous measurement in parallel on multiple frequencies can be equivalent to a single effective frequency. |
| ***perCC-GapIndicationList***  This field is used to indicate per CC measurement gap preference by the UE. |
| ***scg-ConfigResponseNR***  Includes the NR *RRCReconfigurationComplete* message as defined in TS 38.331 [82]. |
| ***selectedCondReconfigurationToApply***  This field indicates the selected conditional RRC connection reconfiguration the UE applied upon the execution of CPA or inter-SN CPC. |

*NEXT CHANGE*

### 6.3.4 Mobility control information elements

– *ConditionalReconfiguration*

The IE *ConditionalReconfiguration* is used to add, modify or release the configuration of a conditional handover, conditional PSCell addition or inter-SN conditional PSCell change per target candidate cell.

***ConditionalReconfiguration* information element**

-- ASN1START

ConditionalReconfiguration-r16 ::= SEQUENCE {

condReconfigurationToAddModList-r16 CondReconfigurationToAddModList-r16 OPTIONAL, -- Need ON

condReconfigurationToRemoveList-r16 CondReconfigurationToRemoveList-r16 OPTIONAL, -- Need ON

attemptCondReconf-r16 ENUMERATED {true} OPTIONAL, -- Cond CHO

...

}

CondReconfigurationToRemoveList-r16 ::= SEQUENCE (SIZE (1..maxCondConfig-r16)) OF CondReconfigurationId-r16

-- ASN1STOP

| ***ConditionalReconfiguration* field descriptions** |
| --- |
| ***attemptCondReconf***  If present, the UE shall perform conditional reconfiguration if selected cell is a target candidate cell and it is the first cell selection after failure as described in 5.3.7.3. |
| ***condReconfigurationToAddModList***  List of conditional reconfigurations (i.e. conditional handover, conditional PSCell addition or inter-SN conditional PSCell change) to add and/or modify. |
| ***condReconfigurationToRemoveList***  List of conditional reconfigurations (i.e. conditional handover, conditional PSCell addition or inter-SN conditional PSCell change) to remove. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *CHO* | The field is optional present, Need OR, if the UE is configured with at least a candidate cell for CHO. Otherwise the field is not present. |

– *ConditionalReconfigurationId*

The IE *ConditionalReconfigurationId* is used to identify a conditional reconfiguration (e.g. CHO, CPA or inter-SN CPC).

***ConditionalReconfigurationId* information element**

-- ASN1START

CondReconfigurationId-r16 ::= INTEGER (1.. maxCondConfig-r16)

-- ASN1STOP

– *CondReconfigurationToAddModList*

The IE *CondReconfigurationToAddModList* concerns a list of conditional reconfigurations (i.e. conditional handover, conditional PSCell addition or inter-SN conditional PSCell change) to add or modify, for each entry the *measId* (associated to the triggering condition configuration) and the associated *RRCConnectionReconfiguration*.

***CondReconfigurationToAddModList* information element**

-- ASN1START

CondReconfigurationToAddModList-r16 ::= SEQUENCE (SIZE (1.. maxCondConfig-r16)) OF CondReconfigurationAddMod-r16

CondReconfigurationAddMod-r16 ::= SEQUENCE {

condReconfigurationId-r16 CondReconfigurationId-r16,

triggerCondition-r16 SEQUENCE (SIZE (1..2)) OF MeasId

OPTIONAL, -- Cond CondReconfigurationAdd

condReconfigurationToApply-r16 OCTET STRING (CONTAINING RRCConnectionReconfiguration)

OPTIONAL,-- Cond CondReconfigurationAdd

...,

[[

triggerConditionSN-r17 OCTET STRING OPTIONAL -- Cond CondReconfigurationAddSN

]]

}

-- ASN1STOP

| ***CondReconfigurationToAddMod* field descriptions** |
| --- |
| ***condReconfigurationToApply***  The RRCConnectionReconfiguration message to be applied when the condition(s) are fulfilled. The *RRCConnectionReconfiguration* in *condReconfigurationToApply* cannot contain a target node SCG configuration. |
| ***triggerCondition***  The condition that needs to be fulfilled in order to trigger the execution of a conditional reconfiguration for CHO, CPA or MN initiated inter-SN CPC. When configuring two triggering events (MeasIds) for a candidate cell, the network ensures that both refer to the same *measObject*. |
| ***triggerConditionSN***  Includes the NR *CondReconfigExecCondSN* as specified in TS 38.331 [82]. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *CondReconfigurationAdd* | The field is mandatory present if a *condReconfigurationId* is being added for CHO, CPA or MN initiated inter-SN CPC. Otherwise it is optional, need ON. |
| *CondReconfigurationAddSN* | The field is mandatory present when a *condReconfigurationId* is being added for SN initiated inter-SN CPC. Otherwise the field is optional, need ON. |

*NEXT CHANGE*

### 6.3.5 Measurement information elements

#### – *ReportConfigInterRAT*

The IE *ReportConfigInterRAT* specifies criteria for triggering of an inter-RAT measurement reporting event or of a CPA or MN initiated inter-SN CPC event. The inter-RAT measurement reporting events for NR, UTRAN, GERAN and CDMA2000 are labelled B*N* with *N* equal to 1, 2 and so on. The inter-RAT measurement reporting events for WLAN are labelled W*N* with *N* equal to 1, 2 and so on.

Event B1: Neighbour becomes better than absolute threshold;

Event B2: PCell becomes worse than absolute threshold1 AND Neighbour becomes better than another absolute threshold2.

Event W1: WLAN becomes better than a threshold;

Event W2: All WLAN inside WLAN mobility set become worse than a threshold1 and a WLAN outside WLAN mobility set becomes better than a threshold2;

Event W3: All WLAN inside WLAN mobility set become worse than a threshold.

CondEvent B1: Conditional reconfigutation candidate becomes better than absolute threshold;

The b1 and b2 event thresholds for CDMA2000 are the CDMA2000 pilot detection thresholds are expressed as an unsigned binary number equal to [-2 x 10 log 10 Ec/Io] in units of 0.5dB, see C.S0005 [25] for details.

*ReportConfigInterRAT* information element

-- ASN1START

ReportConfigInterRAT ::= SEQUENCE {

triggerType CHOICE {

event SEQUENCE {

eventId CHOICE {

eventB1 SEQUENCE {

b1-Threshold CHOICE {

b1-ThresholdUTRA ThresholdUTRA,

b1-ThresholdGERAN ThresholdGERAN,

b1-ThresholdCDMA2000 ThresholdCDMA2000

}

},

eventB2 SEQUENCE {

b2-Threshold1 ThresholdEUTRA,

b2-Threshold2 CHOICE {

b2-Threshold2UTRA ThresholdUTRA,

b2-Threshold2GERAN ThresholdGERAN,

b2-Threshold2CDMA2000 ThresholdCDMA2000

}

},

...,

eventW1-r13 SEQUENCE {

w1-Threshold-r13 WLAN-RSSI-Range-r13

},

eventW2-r13 SEQUENCE {

w2-Threshold1-r13 WLAN-RSSI-Range-r13,

w2-Threshold2-r13 WLAN-RSSI-Range-r13

},

eventW3-r13 SEQUENCE {

w3-Threshold-r13 WLAN-RSSI-Range-r13

},

eventB1-NR-r15 SEQUENCE {

b1-ThresholdNR-r15 ThresholdNR-r15,

reportOnLeave-r15 BOOLEAN

},

eventB2-NR-r15 SEQUENCE {

b2-Threshold1-r15 ThresholdEUTRA,

b2-Threshold2NR-r15 ThresholdNR-r15,

reportOnLeave-r15 BOOLEAN

}

},

hysteresis Hysteresis,

timeToTrigger TimeToTrigger

},

periodical SEQUENCE {

purpose ENUMERATED {

reportStrongestCells,

reportStrongestCellsForSON,

reportCGI}

}

},

maxReportCells INTEGER (1..maxCellReport),

reportInterval ReportInterval,

reportAmount ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

...,

[[ si-RequestForHO-r9 ENUMERATED {setup} OPTIONAL -- Cond reportCGI

]],

[[ reportQuantityUTRA-FDD-r10 ENUMERATED {both} OPTIONAL -- Need OR

]],

[[ includeLocationInfo-r11 BOOLEAN OPTIONAL -- Need ON

]],

[[ b2-Threshold1-v1250 CHOICE {

release NULL,

setup RSRQ-Range-v1250

} OPTIONAL -- Need ON

]],

[[ reportQuantityWLAN-r13 ReportQuantityWLAN-r13 OPTIONAL -- Need ON

]],

[[ reportAnyWLAN-r14 BOOLEAN OPTIONAL -- Need ON

]],

[[ reportQuantityCellNR-r15 ReportQuantityNR-r15 OPTIONAL, -- Need ON

maxReportRS-Index-r15 INTEGER (0..maxRS-IndexReport-r15) OPTIONAL, -- Need ON

reportQuantityRS-IndexNR-r15 ReportQuantityNR-r15 OPTIONAL, -- Need ON

reportRS-IndexResultsNR BOOLEAN OPTIONAL, -- Need ON

reportSFTD-Meas-r15 ENUMERATED {pSCell, neighborCells } OPTIONAL -- Need ON

]],

[[

useAutonomousGapsNR-r16 ENUMERATED {setup} OPTIONAL, -- Cond reportCGI-NR

measRSSI-ReportConfigNR-r16 MeasRSSI-ReportConfig-r13 OPTIONAL -- Need ON

]],

[[condReconfigurationTriggerNR-r17 CondReconfigurationTriggerNR-r17 OPTIONAL-- Need ON

]]

}

CondReconfigurationTriggerNR-r17 ::= SEQUENCE {

condEventId-r17 CHOICE {

condEventB1-NR-r17 SEQUENCE {

b1-ThresholdNR-r17 ThresholdNR-r15,

hysteresis-r17 Hysteresis,

timeToTrigger-r17 TimeToTrigger

},

...

}

}

ThresholdUTRA ::= CHOICE{

utra-RSCP INTEGER (-5..91),

utra-EcN0 INTEGER (0..49)

}

ThresholdGERAN ::= INTEGER (0..63)

ThresholdCDMA2000 ::= INTEGER (0..63)

ReportQuantityNR-r15::= SEQUENCE {

ss-rsrp BOOLEAN,

ss-rsrq BOOLEAN,

ss-sinr BOOLEAN

}

ReportQuantityWLAN-r13 ::= SEQUENCE {

bandRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

carrierInfoRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

availableAdmissionCapacityRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

backhaulDL-BandwidthRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

backhaulUL-BandwidthRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

channelUtilizationRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

stationCountRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

...

}

-- ASN1STOP

| *ReportConfigInterRAT* field descriptions |
| --- |
| ***availableAdmissionCapacityRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Available Admission Capacity in measurement reports. |
| ***backhaulDL-BandwidthRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Backhaul Downlink Bandwidth in measurement reports. |
| ***backhaulUL-BandwidthRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Backhaul Uplink Bandwidth in measurement reports. |
| ***bandRequestWLAN***  The value true indicates that the UE shall include WLAN band in measurement reports. |
| ***bN-ThresholdM***  Threshold to be used in inter RAT measurement report triggering condition for event number bN. If multiple thresholds are defined for event number bN, the thresholds are differentiated by M. |
| ***carrierInfoRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Carrier Information in measurement reports. |
| ***condReconfigurationTriggerNR***  The conditional reconfiguration trigger event that is used for CPA or MN initiated inter-SN CPC. |
| ***condEventId***  Choice of conditional reconfiguration event triggered criteria. |
| ***channelUtilizationRequest-WLAN***  The value true indicates that the UE shall include, if available, WLAN Channel Utilization in measurement reports. |
| ***eventId***  Choice of inter-RAT event triggered reporting criteria. |
| ***maxReportCells***  Max number of cells, excluding the serving cell, to include in the measurement report. In case *purpose* is set to *reportStrongestCellsForSON* only value 1 applies. For inter-RAT WLAN, it is the maximum number of WLANs to include in the measurement report. |
| ***maxReportRS-Index***  Max number of RS indices to include in the measurement report. E-UTRAN configures value 0 only if it sets *reportRS-IndexResultsNR* to *FALSE*. |
| ***measRSSI-ReportConfigNR***  If this field is present, the UE shall perform measurement reporting for RSSI and channel occupancy and ignore the *triggerQuantity*, *reportQuantity* and *maxReportCells* fields. E-UTRAN sets this field to *true* only when setting *triggerType* to *periodical* and *purpose* to *reportStrongestCells*. |
| ***Purpose***  *reportStrongestCellsForSON* applies only in case *reportConfig* is linked to a *measObject* set to *measObjectUTRA* or *measObjectCDMA2000*. |
| ***reportAmount***  Number of measurement reports applicable for *triggerType* *event* as well as for *triggerType* *periodical*. In case *purpose* is set to *reportCGI* or reportStrongestCellsForSON only value 1 applies. In case *reportSFTD-Meas* is configured, only value 1 applies. |
| ***reportAnyWLAN***  Indicates UE to report any WLAN AP meeting the triggering requirements, even if it is not included in the corresponding *MeasObjectWLAN*. |
| ***reportOnLeave***  Indicates whether or not the UE shall initiate the measurement reporting procedure when the leaving condition is met for a cell in *cellsTriggeredList*, as specified in 5.5.4.1. |
| ***reportQuantityUTRA-FDD***  The quantities to be included in the UTRA measurement report***.*** The value *both* means that both the cpich RSCP and cpich EcN0 quantities are to be included in the measurement report. |
| ***reportRS-IndexResultsNR***  Indicates whether or not the UE shall report beam measurement result of NR in the measurement report. |
| ***reportSFTD-Meas***  If this field is set to *pSCell*, the UE shall measure SFTD between the PCell and the PSCell as specified in TS 38.215 [89], in this case, the frequency of PSCell is configured in the corresponding *measObjectNR*. If the field is set to *neighborCells*, the UE shall measure SFTD between the PCell and the NR cells included in *cellsForWhichToReportSFTD* (if configured in the corresponding *measObjectNR*) or between the PCell and up to 3 strongest detected NR cells (if *cellsForWhichToReportSFTD* is not configured in the corresponding *measObjectNR*), as specified in TS 38.215 [89]. E-UTRAN only includes this field when setting *triggerType* to *periodical* and *purpose* to *reportStrongestCells*. If included, the UE shall ignore the *maxReportCells* field. |
| ***si-RequestForHO***  The field applies to the *reportCGI* functionality, and when the field is included, the UE is allowed to use autonomous gaps in acquiring system information from the neighbour cell, applies a different value for T321, and includes different fields in the measurement report. EUTRAN does not configure the field if *reportConfig* is linked to a *measObject* set to *measObjectNR*. |
| ***ss-rsrp***  Indicates whether or not the UE shall report SS-RSRP quantity of NR. |
| ***ss-rsrq***  Indicates whether or not the UE shall report SS-RSRQ quantity of NR. |
| ***ss-sinr***  Indicates whether or not the UE shall report SS-SINR quantity of NR. |
| ***stationCountRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Station Count in measurement reports. |
| ***b1-ThresholdGERAN, b2-Threshold2GERAN***  The actual value is field value – 110 dBm. |
| ***b1-ThresholdUTRA, b2-Threshold2UTRA***  *utra-RSCP* corresponds to CPICH\_RSCP in TS 25.133 [29] for FDD and P-CCPCH\_RSCP in TS 25.123 [30] for TDD. *utra-EcN0* corresponds to CPICH\_Ec/No in TS 25.133 [29] for FDD, and is not applicable for TDD.  For *utra-RSCP*: The actual value is field value – 115 dBm.  For *utra-EcN0*: The actual value is (field value – 49)/2 dB. |
| ***timeToTrigger***  Time during which specific criteria for the event needs to be met in order to trigger a measurement report or to execute the conditional reconfiguration evaluation. |
| ***triggerType***  E-UTRAN does not configure the value *periodical* in case *reportConfig* is linked to a *measObject* set to *measObjectWLAN*. |
| ***useAutonomousGapsNR***  The field applies to the *reportCGI* functionality, and when the field is included, the UE is allowed to use autonomous gaps in acquiring system information from the NR neighbour cell, applies the corresponding value for T321, EUTRAN can configure the field only if *reportConfig* is linked to a *measObject* set to *measObjectNR*. | |

| Conditional presence | Explanation |
| --- | --- |
| *reportCGI* | The field is optional, need OR, in case *purpose* is included and set to *reportCGI*; otherwise the field is not present and the UE shall delete any existing value for this field. |
| *reportCGI-NR* | The field is optional, need OR, in case *purpose* is included and set to *reportCGI,* and *reportConfig* is linked to a *measObject* set to *measObjectNR*, otherwise the field is not present and the UE shall delete any existing value for this field. | |

*NEXT CHANGE*

# 7 Variables and constants

## 7.1 UE variables

NOTE: To facilitate the specification of the UE behavioural requirements, UE variables are represented using ASN.1. Unless explicitly specified otherwise, it is however up to UE implementation how to store the variables. The optionality of the IEs in ASN.1 is used only to indicate that the values may not always be available.

#### – *VarConditionalReconfiguration*

The UE variable *VarConditionalReconfiguration* includes the accumulated configuration of conditional reconfigurations (i.e. conditional handovers, conditional PSCell addition or inter-SN conditional PSCell change) including the configurations of triggering conditions to be monitored and the stored *RRCConnectionReconfiguration* per target candidate, to be applied upon the fulfilment of the associated triggering conditions.

*VarConditionalReconfiguration* UE variable

-- ASN1START

VarConditionalReconfiguration ::= SEQUENCE {

-- Conditional reconfigurations list

condReconfigurationList-r16 CondReconfigurationToAddModList-r16

OPTIONAL

}

-- ASN1STOP

*END OF CHANGE*