3GPP TSG-RAN WG3 #114-e R3-216147

1-11 Nov 2021

Online

Agenda Item: 14.3

Source: ZTE

Title: (TP for CPAC BLCR to TS36.423) CPA and CPC replace and cancel

Document for: Approval

# Introduction

This TP is based on the following CB.

**CB: # MRDC3\_CPAC**

**- Check RAN2 progress**

**- Support preparation of single T-SN in SN initiated inter-SN CPC first to progress, and then discuss how to prepare multiple T-SNs as second priority? Check RAN2 progress and focus on open issues from last meeting**

**- CPAC replace and cancel procedure?**

**- Capture agreements as stage2/stage3 CRs and check details, split work, if needed**

**- List open issues for next meeting in the summary**

(Lenovo - moderator)

Summary of offline disc [R3-215864](file:///C%3A%5CUsers%5Ckordybac%5COneDrive%20-%20Nokia%5CS%C5%82u%C5%BCbowe%5C3GPP%5CWG3%20%23114%20211101%5CPrzygotowania%5CNaSpotkaniu%5CCB%20%23%20MRDC3_CPAC%5CPhase%202%5CInbox%5CR3-215864.zip).

# Text Proposal for TS36.423

**------------------------------------------------Start of the change--------------------------------------------------**

### 8.7.6 MeNB initiated SgNB Modification Preparation

#### 8.7.6.1 General

This procedure is used to enable an MeNB to request an en-gNB to modify the UE context at the en-gNB, or to query the current SCG configuration for supporting delta signalling in MeNB initiated SgNB change, or to provide the S-RLF-related information to the en-gNB.

The procedure uses UE-associated signalling.

#### 8.7.6.2 Successful Operation



Figure 8.7.6.2-1: MeNB initiated SgNB Modification Preparation, successful operation

The MeNB initiates the procedure by sending the SGNB MODIFICATION REQUEST message to the en-gNB. When the MeNB sends the SGNB MODIFICATION REQUEST message, it shall start the timer TDCprep.

The SGNB MODIFICATION REQUEST message may contain:

- within the *UE Context Information* IE (if the modification of the UE context at the en-gNB is requested);

- E-RABs to be added within the *E-RABs To Be Added Item* IE;

- E-RABs to be modified within the *E-RABs To Be Modified Item* IE;

- E-RABs to be released within the *E-RABs To Be Released Item* IE;

- the *SgNB UE Aggregate Maximum Bit Rate* IE;

- the *MeNB to SgNB Container* IE;

- the *SCG Configuration Query* IE;

- the *MeNB Resource Coordination Information* IE;

- the *Requested split SRBs IE*;

- the *Requested split SRBs release* IE;

- the *Requested fast MCG recovery via SRB3 IE*;

- the *Requested fast MCG recovery via SRB3 Release* IE.

If the SGNB MODIFICATION REQUEST message contains the *Serving PLMN* IE, the en-gNB may use it for RRM purposes.

If the SGNB MODIFICATION REQUEST message contains the *Handover Restriction List* IE, the en-gNB shall

- replace the previously provided Handover Restriction List by the received Handover Restriction List in the UE context;

- use this information to select an appropriate NR cell.

If the *SgNB UE Aggregate Maximum Bit Rate* IE is included in the SGNB MODIFICATION REQUEST message, the en-gNB shall:

- replace the previously provided SgNB UE Aggregate Maximum Bit Rate by the received SgNB UE Aggregate Maximum Bit Rate in the UE context;

- use the received SgNB UE Aggregate Maximum Bit Rate for non-GBR Bearers for the concerned UE as defined in TS 37.340 [32].

The allocation of resources according to the values of the *QCI* IE, *Allocation and Retention Priority* IE or *GBR QoS Information* IE included in the *Full E-RAB Level QoS Parameters* IE or in the *Requested SCG E-RAB Level QoS Parameters* IE shall follow the principles described for the E-RAB Setup procedure in TS 36.413 [4].

If the SGNB MODIFICATION REQUEST message contains the *MeNB Resource Coordination Information* IE, the en-gNB should forward it to lower layers and it may use it for the purpose of resource coordination with the MeNB, or to coordinate with sidelink resources used in the MeNB. The en-gNB shall consider the received *UL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. The en-gNB shall consider the received *DL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. If the *MeNB Coordination Assistance Information* IE is contained in the *MeNB Resource Coordination Information* IE, the en-gNB shall, if supported, use the information to determine further coordination of resource utilisation between the en-gNB and the MeNB.

If at least one of the requested modifications is admitted by the en-gNB, the en-gNB shall modify the related part of the UE context accordingly and send the SGNB MODIFICATION REQUEST ACKNOWLEDGE message back to the MeNB.

The en-gNB shall include the E-RABs for which resources have been either added or modified or released at the en-gNB either in the *E-RABs Admitted To Be Added List* IE or the *E-RABs Admitted To Be Modified List* IE or the *E-RABs Admitted To Be Released List* IE. The en-gNB shall include the E-RABs that have not been admitted in the *E-RABs Not Admitted List* IE with an appropriate cause value.

For each E-RAB successfully established or modified or released in the en-gNB, the en-gNB shall report to the MeNB, in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message, the same value in the *EN-DC Resource Configuration* IE as received in the SGNB MODIFICATION REQUEST message.

The en-gNB shall, if included, choose the ciphering algorithm based on the information in the *NR* *UE Security Capabilities* IE and locally configured priority list of AS encryption algorithms and apply the key indicated in the *SgNB Security Key* IE as specified in the TS 33.401 [18].

For each E-RAB for which allocation of the PDCP entity is requested at the en-gNB:

- if applicable, the MeNB may propose to apply forwarding of downlink data by including the *DL Forwarding* IE within the *E-RABs To Be Added Item* IE of the SGNB MODIFICATION REQUEST message. For each E-RAB that it has decided to admit, the en-gNB may include the *DL Forwarding GTP Tunnel Endpoint* IE within the *E-RABs Admitted To Be Added Item* IE of the SGNB MODIFICATION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this bearer. The MeNB may also provide for an applicable E-RAB to be released the *DL Forwarding GTP Tunnel Endpoint* IE and the *UL Forwarding GTP Tunnel Endpoint* IE within the *E-RABs To Be Released Item* IE of the SGNB MODIFICATION REQUEST message.

- if applicable, the en-gNB may include for each bearer in the *E-RABs Admitted To Be Added List* IE in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message the *UL Forwarding GTP Tunnel Endpoint* IE to indicate that it requests data forwarding of uplink packets to be performed for that bearer.

- if applicable, the en-gNB may include for each bearer in the *E-RABs Admitted To Be Modified* List IE which is configured with the SN terminated split bearer option in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message the *UL Configuration* IE to indicate that the MCG UL configuration of the UE has changed.

- if applicable, the en-gNB may include for each bearer in the *E-RABs Admitted To Be Added List* IE in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message the *UL* *PDCP SN Length* IE and the *DL PDCP SN Length* IE to indicate the PDCP SN length for that bearer.

- If the *Bearer Type* IE for the concerned E-RAB is received by the en-gNB and is set to"non IP", then the en-gNB shall, if supported, not perform IP header compression for the concerned E-RAB.

- If the *Ethernet Type* IE for the concerned E-RAB is received by the en-gNB and is set to "True", the en-gNB shall take this into account to perform header compression appropriately for the concerned E-RAB.

For each E-RAB configured with SCG resources and the PDCP entity is hosted by the MeNB and

- requested to be modified,

- if the SGNB MODIFICATION REQUEST message includes the *MeNB UL GTP Tunnel Endpoint at PDCP* IE in the *E-RABs To Be Modified Item* IE, the en-gNB shall act as specified in TS 37.340 [32].

- if the SGNB MODIFICATION REQUEST message contains the *MeNB UL GTP Tunnel Endpoint at PDCP* IE the en-gNB shall use it as the new UL X2-U address.

- the en-gNB may include in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message the *SgNB DL GTP Tunnel Endpoint at SCG* IE.

If, dependent on the configured bearer type, the *Full E-RAB Level QoS Parameters* IE or the *Maximum MCG admittable E-RAB Level QoS Parameters* IE or the *Requested SCG E-RAB level QoS Parameters* IE are included in the SGNB MODIFICATION REQUEST message for an E-RAB to be modified the en-gNB shall allocate respective resources and provide corresponding radio configuration information within the *SgNB to MeNB Container* IE as described in TS 37.340 [32].

If the SGNB MODIFICATION REQUEST message contains, for an E-RAB to be modified which is configured with the PDCP entity in the en-gNB, the *S1 UL GTP Tunnel Endpoint* IE, the en-gNB shall use it as the new UL S1-U address.

If the SGNB MODIFICATION REQUEST message contains an E-RAB to be modified which is configured with the MN terminated split bearer option, the MeNB may include the *UL Configuration* IEto indicate that the SCG UL configuration of the UE has changed.

If the SGNB MODIFICATION REQUEST message contains for an E-RAB to be modified which is configured with the PDCP enitiy in the en-gNB and MCG resources the *MeNB DL GTP Tunnel Endpoint at MCG* IE the en-gNB shall use it as the DL X2-U address.

If the SGNB MODIFICATION REQUEST message contains the *Subscriber Profile ID for RAT/Frequency Priority* IE, the en-gNB may use it for RRM purposes.

If the SGNB MODIFICATION REQUEST message contains the *Additional RRM Policy Index* IE, the en-gNB may use it for RRM purposes.

For an E-RAB to be modified which is configured with the PDCP entity in the en-gNB the en-gNB may include in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message the *S1 DL GTP Tunnel Endpoint at the SgNB* IE.

If the SGNB MODIFICATION REQUEST ACKNOWLEDGE message contains the *SgNB Resource Coordination Information* IE, the MeNB may use it for the purpose of resource coordination with the en-gNB. The MeNB shall consider the received *UL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. The MeNB shall consider the received *DL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. If the *SgNB Coordination Assistance Information* IE is contained in the *SgNB Resource Coordination Information* IE, the MeNB shall, if supported, use the information to determine further coordination of resource utilisation between the en-gNB and the MeNB.

Upon reception of the SGNB MODIFICATION REQUEST ACKNOWLEDGE message the MeNB shall stop the timer TDCprep. If the SGNB MODIFICATION REQUEST ACKNOWLEDGE message has included the *SgNB to MeNB Container* IE the MeNB is then defined to have a Prepared SgNB Modification for that X2 UE-associated signalling.

If the *SCG Configuration Query* IE is included in the SGNB MODIFICATION REQUEST message, the en-gNB shall provide corresponding radio configuration information within the *SgNB to MeNB Container* IE as described in TS 37.340 [32].

If the SGNB MODIFICATION REQUEST message contains the *Requested split SRBs* IE, the en-gNB may use it to add split SRBs. If the SGNB MODIFICATION REQUEST message contains the *Requested split SRBs* *release* IE, the en-gNB may use it to release split SRBs.

If the *Requested Fast MCG recovery via SRB3* IE set to "true" is included in the SGNB MODIFICATION REQUEST message and the en-gNB decides to configure fast MCG link recovery via SRB3 as specified in TS 37.340 [32], the en-gNB shall, if supported, include the *Available fast MCG recovery via SRB3* IE set to "true" in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message. If the *Requested Fast MCG recovery via SRB3 Release* IE set to "true" is included in the SGNB MODIFICATION REQUEST message and the en-gNB decides to release fast MCG link recovery via SRB3, the en-gNB shall, if supported, include the *Release fast MCG recovery via SRB3* IE set to "true" in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message.

If the en-gNB receives for an E-RAB to be setup for which the PDCP entiy is allocated at the MeNB the *Secondary MeNB UL GTP Tunnel Endpoint at PDCP* IE and the *Duplication Activation* IE in the SGNB MODIFICATION REQUEST message, it may provide the *Secondary SgNB DL GTP Tunnel Endpoint at SCG* IE and the *LCID* IE to the MeNB in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message if PDCP duplication is configured at the en-gNB.

If the SGNB MODIFICATION REQUEST message contains the *RLC Status* IE, the en-gNB shall assume that RLC has been reestablished at the MeNB and may trigger PDCP data recovery.

If the en-gNB applied a full configuration or delta configuration, e.g. as part of a mobility procedure involving a change of DU, the en-gNB shall inform the MeNB by including the *RRC config indication* IE in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message.

If SGNB MODIFICATION REQUEST message contains the *UL PDCP SN Length* IE and the *DL PDCP SN Length* IE, the en-gNB shall, if supported, store this information and use it for lower layer configuration of the concerned MN terminated bearer.

If the *RLC Mode* IE is included for an E-RAB within the *E-RABs To be Added List* IE in the SGNB MODIFICATION REQUEST message, it indicates the mode that the MeNB used for the E-RAB when it was hosted at the MeNB.

If the SGNB MODIFICATION REQUEST message contains the *MeNB Cell ID* IE, the en-gNB may search for the target NR cell among the NR neighbour cells of the E-UTRAN cell indicated in *MeNB Cell ID* IE, as specified in the TS 37.340 [32].

If the SGNB MODIFICATION REQUEST ACKNOWLEDGE message contains the *RLC Status* IE, the MeNB shall assume that RLC has been reestablished at the en-gNB and may trigger PDCP data recovery.

The en-gNB may include the *Location Information at SgNB* IE in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message, if respective information is available at the en-gNB.

If the *Location Information at* en-gNB *Reporting* IE set to "pscell" is included in the SGNB MODIFICATION REQUEST, the SgNB shall start providing information about the current location of the UE. If the *Location Information* *at SgNB* IE is included in the SGNB MODIFICATION REQUEST ACKNOWLEDGE, the MeNB shall store the included information so that it may be transferred towards the MME.

If the *Lower Layer presence status change* IE set to "release lower layers" is included in the SGNB MODIFICATION REQUEST message, the en-gNB shall act as specified in TS 37.340 [32].

If the *Lower Layer presence status change* IE set to "re-establish lower layers" is included in the SGNB MODIFICATION REQUEST message, the en-gNB shall act as specified in TS 37.340 [32].

If the *Lower Layer presence status change* IE set to "suspend lower layers" is included in the SGNB MODIFICATION REQUEST message, the en-gNB shall act as specified in TS 37.340 [32].

If the *Lower Layer presence status change* IE set to "resume lower layers" is included in the SGNB MODIFICATION REQUEST message, the en-gNB shall act as specified in TS 37.340 [32].

If the SGNB MODIFICATION REQUEST message contains the *IAB Node Indication* IE, the en-gNB shall, if supported, consider that the request is for an IAB node.

For each requested E-RAB configured as MN-terminated split bearer/SCG bearer, if the *QoS Mapping Information* IE is contained in the *GTP Tunnel Endpoint* IE in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message, the MeNB shall, if supported, use it to set DSCP and/or flow label fields for the downlink IP packets which are transmitted from MeNB to SgNB through the GTP tunnels indicated by the *GTP Tunnel Endpoint* IE.

If the SGNB MODIFICATION REQUEST message indicates cancellation of prepared PSCells, the MeNB node shall consider that the request concerns cancelling some of the prepared PSCells initiated by the target en-gNB node, as described in TS 37.340 [32].

Note: the IE used to indicate PSCells cancellation is FFS.

**Interactions with the MeNB initiated SgNB Modification procedure:**

If the en-gNB provides for an E-RAB to be setup for which the PDCP entiy is allocated at the MeNB the *Secondary SgNB DL GTP Tunnel Endpoint at SCG* IE and the *LCID* IE to the MeNB in the SGNB MODIFICATION REQUEST ACKNOWLEDGE message and the MeNB has not provided the *Secondary MeNB UL GTP Tunnel Endpoint at PDCP* IE and the *Duplication Activation* IE in the SGNB MODIFICATION REQUEST message, the MeNB shall trigger the MeNB initiated SgNB Modification procedure to provide the *Secondary MeNB UL GTP Tunnel Endpoint at PDCP* IE and the *Duplication Activation* IE to the SgNB.

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### 8.7.7 SgNB initiated SgNB Modification

#### 8.7.7.1 General

This procedure is used by the en-gNB to modify the UE context in the en-gNB.

The procedure uses UE-associated signalling.

#### 8.7.7.2 Successful Operation



Figure 8.7.7.2-1: SgNB initiated SgNB Modification, successful operation.

The en-gNB initiates the procedure by sending the SGNB MODIFICATION REQUIRED message to the MeNB. When the en-gNB sends the SGNB MODIFICATION REQUIRED message, it shall start the timer TDCoverall.

The SGNB MODIFICATION REQUIRED message may contain

- the *PDCP Change Indication* IE;

- the *SgNB to MeNB Container* IE.

- E-RABs to be modified within the *E-RABs To Be Modified Item* IE;

- E-RABs to be released within the *E-RABs To Be Released Item* IE;

- the *SgNB Resource Coordination Information* IE.

For the SN terminated split bearers, the en-gNB may include in the SGNB MODIFICATION REQUIRED message the *UL Configuration* IE to indicate that the MCG UL configuration of the UE has changed.

The en-gNB may include for each bearer in the *E-RABs to Be Modified* *List* IE in the SGNB MODIFICATION REQUIRED message the *New DRB ID Request* IE to request the MeNB to assign a new DRB ID for that bearer.

If the MeNB is able to perform the change requested by the en-gNB, the MeNB shall send the SGNB MODIFICATION CONFIRM message to the en-gNB. The SGNB MODIFICATION CONFIRM message may contain the *MeNB to SgNB Container* IE.

If the SGNB MODIFICATION REQUIRED message contains the *SgNB Resource Coordination Information* IE, the MeNB may use it for the purpose of resource coordination with the en-gNB. The MeNB shall consider the received *UL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. The MeNB shall consider the received *DL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. If the *SgNB Coordination Assistance Information* IE is contained in the *SgNB Resource Coordination Information* IE, the MeNB shall, if supported, use the information to determine further coordination of resource utilisation between the en-gNB and the MeNB.

If the en-gNB applied a full configuration or delta configuration, e.g. as part of a mobility procedure involving a change of DU, the en-gNB shall inform the MeNB by including the *RRC config indication* IE in the SGNB MODIFICATION REQUIRED message.

For each E-RAB successfully modified as requested by the en-gNB, the MeNB shall inform the en-gNB, in the SGNB MODIFICATION CONFIRM message, the same value in the *EN-DC Resource Configuration* IE as received in the SGNB MODIFICATION REQUIRED message.

Upon reception of the SGNB MODIFICATION CONFIRM message the en-gNB shall stop the timer TDCoverall.

If the SGNB MODIFICATION CONFIRM message contains the *MeNB Resource Coordination Information* IE, the en-gNB should forward it to lower layers and it may use it for the purpose of resource coordination with the MeNB, or to coordinate with sidelink resources used in the MeNB. The en-gNB shall consider the received *UL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. The en-gNB shall consider the received *DL Coordination Information* IE value valid until reception of a new update of the IE for the same UE. If the *MeNB Coordination Assistance Information* IE is contained in the *MeNB Resource Coordination Information* IE, the en-gNB shall, if supported, use the information to determine further coordination of resource utilisation between the en-gNB and the MeNB.

If the MeNB receives for an E-RAB for which the PDCP entiy is allocated at the MeNB the *Secondary SgNB DL GTP Tunnel Endpoint at SCG* IE in the SGNB MODIFICATION REQUIRED message, it shall provide the *Secondary MeNB UL GTP Tunnel Endpoint at PDCP* IE to the en-gNB in the SGNB MODIFICATION CONFIRM message. If the *LCID* IE is included in the SGNB MODIFICATION REQUIRED message, the MeNB should take it into account.

If the SGNB MODIFICATION REQUIRED message contains the *RLC Status* IE, the MeNB shall assume that RLC has been reestablished at the en-gNB and may trigger PDCP data recovery.

If the *RLC Mode* IE is included for an E-RAB within the *E-RABs To Be Released List* IE (for E-RABs hosted at the en-gNB) in the SGNB MODIFICATION REQUIRED message, it indicates the mode that the en-gNB used for the E-RAB when it was hosted at the en-gNB.

The MeNB shall include only E-RABs with the following IE in *E-RABs Admitted To Be Modified List* IE:

- the *Secondary MeNB UL GTP Tunnel Endpoint at PDCP* IE.

If the *Location Information* *at SgNB* IE is included in the SGNB MODIFICATION REQUIRED, the MeNB shall store the included information so that it may be transferred towards the MME.

If the SGNB MODIFICATION REQUIRED message indicates cancellation of prepared PSCells, the MeNB node shall consider that the requirement concerns cancelling some of the prepared PSCells initiated by the target en-gNB node, as described in TS 37.340 [32].

Note: the IE used to indicate PSCells cancellation is FFS.

**Interaction with the MeNB initiated SgNB Modification Preparation procedure:**

If applicable, as specified in TS 37.340 [32], the en-gNB may receive, after having initiated the SgNB initiated SgNB Modification procedure, the SGNB MODIFICATION REQUEST message including the *DL Forwarding GTP Tunnel Endpoint* IE and the *UL Forwarding GTP Tunnel Endpoint* IE within the *E-RABs To Be Released List* IE.

If applicable, as specified in TS 37.340 [32], the en-gNB may receive, after having initiated the SgNB initiated SgNB Modification procedure, the SGNB MODIFICATION REQUEST message including the *SgNB Security Key* IE within the *UE Context Information* IE.

If applicable, as specified in TS 37.340 [32], the en-gNB may receive, after having initiated the SgNB initiated SgNB Modification procedure, the SGNB MODIFICATION REQUEST message including the *measGapConfig* IE as defined in TS 38.331 [31] within the *MeNB to SgNB Container* IE.

The en-gNB may receive, after having initiated the SgNB initiated SgNB modification procedure including the *New DRB ID Request* IE for an SN terminated bearer within the *E-RABs To Be Modified List* IE, the SGNB MODIFICATION REQUEST message to release and add the same bearer with a new DRB ID or with the same DRB ID but together with the *SgNB Security Key* IE within the *UE Context Information* IE.

The en-gNB may receive, after having initiated the SgNB initiated SgNB modification procedure, the SGNB MODIFICATION REQUEST message including the *SN triggered* IE.

### 8.7.8 SgNB Change

#### 8.7.8.1 General

This procedure is used by the en-gNB to change to another en-gNB.

The procedure uses UE-associated signalling.

#### 8.7.8.2 Successful Operation



Figure 8.7.8.2-1: SgNB Change, successful operation.

The en-gNB initiates the procedure by sending the SGNB CHANGE REQUIRED message to the MeNB including the *Target SgNB ID Information IE*. When the en-gNB sends the SGNB CHANGE REQUIRED message, it shall start the timer TDCoverall.

The SGNB CHANGE REQUIRED message may contain

- the *SgNB to MeNB Container* IE.

If the MeNB is able to perform the change requested by the en-gNB, the MeNB shall send the SGNB CHANGE CONFIRM message to the en-gNB. For each E-RAB configured with the PDCP entity in the en-gNB, the MeNB may include the *DL Forwarding GTP Tunnel Endpoint* IE and the *UL Forwarding GTP Tunnel Endpoint* IE within the *E-RABs To Be Released Item* IE to indicate that it requests data forwarding of uplink and downlink packets to be performed for that bearer.

The en-gNB may start data forwarding and stop providing user data to the UE and shall stop the timer TDCoverall upon reception of the SGNB CHANGE CONFIRM message.

If the SGNB CHANGE REQUIRED message indicates releasing target en-gNB and cancelling all prepared PSCells in the target en-gNB(s), the MeNB shall consider that the requirement concerns source en-gNB triggered target en-gNB release and cancellation of all the prepared PSCells at the target en-gNB(s) during a Conditional PSCell Change.

Note: the IE used in the SGNB CHANGE REQUIRED message to indicate releasing target en-gNB(s) and cancelling all prepared PSCells in the target en-gNB(s) is FFS

Interaction with MeNB initiated SgNB Release:

If the MeNB receives the SGNB CHANGE REQUIRED message releasing target en-gNB and cancelling all prepared PSCells in the target en-gNB(s), the MeNB shall trigger the MeNB node initiated en-gNB node release procedure to the target en-gNB(s) and cancel all the prepared PSCells at the target en-gNB (s).

### 8.7.9 MeNB initiated SgNB Release

#### 8.7.9.1 General

The MeNB initiated SgNB Release procedure is triggered by the MeNB to initiate the release of the resources for a specific UE.

The procedure is also used by the MeNB to cancel all the prepared PSCells during a Conditional PSCell Addition or Change.

The procedure uses UE-associated signalling.

#### 8.7.9.2 Successful Operation



Figure 8.7.9.2-1: MeNB initiated SgNB Release, successful operation

### 8.7.10 SgNB initiated SgNB Release

#### 8.7.10.1 General

This procedure is triggered by the en-gNB to initiate the release of the resources for a specific UE.

The procedure is also used by the target en-gNB to cancel all the prepared PSCells during a Conditional PSCell Addition or Change.

The procedure uses UE-associated signalling.

#### 8.7.10.2 Successful Operation



Figure 8.7.10.2-1: SgNB initiated SgNB Release, successful operation.

### 8.7.xx CPC Cancel

#### 8.3.xx.1 General

This procedure is used by the MeNB node to inform the en-gNB that a list of prepared PSCells are cancelled in the Targert en-gNB during a Conditional PSCell Change.

The procedure uses UE-associated signalling.

#### 8.3.xx.2 Successful Operation



Figure 8.7.xx.2-1: CPC Cancel

The MeNB initiates the procedure by sending the CPC CANCEL message to the en-gNB including the *Target en-gNB ID* IE and the *CPAC Cancellation Request* IE.

#### 8.3.xx.3 Unsuccessful Operation

Not applicable.

#### 8.3.xx.4 Abnormal Conditions

Void.

---------skip unchanged----------

**------------------------------------------------Next change--------------------------------------------------**

9.1.4.5 SGNB MODIFICATION REQUEST

This message is sent by the MeNB to the en-gNB to request the preparation to modify en-gNB resources for a specific UE, to query for the current SCG configuration, or to provide the S-RLF-related information to the en-gNB.

Direction: MeNB → en-gNB.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.13 |  | YES | reject |
| MeNB UE X2AP ID | M |  | eNB UE X2AP ID9.2.24 | Allocated at the MeNB. | YES | reject |
| SgNB UE X2AP ID | M |  | en-gNB UE X2AP ID9.2.100 | Allocated at the en-gNB. | YES | reject |
| Cause | M |  | 9.2.6 |  | YES | ignore |
| Selected PLMN | O |  | PLMN Identity9.2.4 | The selected PLMN of the SCG in the en-gNB. | YES | ignore |
| Handover Restriction List | O |  | 9.2.3 |  | YES | ignore |
| SCG Configuration Query  | O |  | 9.2.103 |  | YES | ignore |
| **UE Context Information** |  | *0..1* |  |  | YES | reject |
| >NR UE Security Capabilities | O |  | 9.2.107 |  | – |  |
| >SgNB Security Key | O |  | 9.2.101 |  | – |  |
| >SgNB UE Aggregate Maximum Bit Rate | O |  | UE Aggregate Maximum Bit Rate9.2.12 |  | – |  |
| >Lower Layer presence status change | O |  | 9.2.145 |  | – |  |
| **>E-RABs To Be Added List** |  | *0..1* |  |  | – |  |
| **>>E-RABs To Be Added Item** |  | *1 .. <maxnoofBearers>* |  |  | EACH | ignore |
| >>>E-RAB ID | M |  | 9.2.23 |  | – |  |
| >>>DRB ID | M |  | 9.2.122 |  | – |  |
| >>>EN-DC Resource Configuration | M |  | EN-DC Resource Configuration9.2.108 | Indicates the PDCP and Lower Layer MCG/SCG configuration. | – |  |
| >>>CHOICE *Resource Configuration* | M |  |  |  |  |  |
| >>>>*PDCP present in SN* |  |  |  | This choice tag is used if the *PDCP at SgNB* IE in the *EN-DC Resource Configuration* IE is set to the value "present". | – |  |
| >>>>>Full E-RAB Level QoS Parameters | M |  | E-RAB Level QoS Parameters 9.2.9 | Includes E-RAB level QoS parameters as received on S1-MME. | – |  |
| >>>>>Maximum MCG admittable E-RAB Level QoS Parameters | C-ifMCGandSCGpresent\_GBR |  | GBR QoS Information 9.2.10 | Includes the GBR QoS Information admittable by the MCG. | – |  |
| >>>>>DL Forwarding  | O |  | 9.2.5 |  | – |  |
| >>>>>MeNB DL GTP Tunnel Endpoint at MCG | C-ifMCGpresent |  | GTP Tunnel Endpoint 9.2.1 | MeNB endpoint of the X2-U transport bearer at MCG. For delivery of DL PDCP PDUs. | – |  |
| >>>>>S1 UL GTP Tunnel Endpoint | M |  | GTP Tunnel Endpoint 9.2.1 | SGW endpoint of the S1-U transport bearer. For delivery of UL PDUs from the en-gNB. | – |  |
| >>>>>RLC Mode | O |  | RLC Mode9.2.119 | Indicates the RLC mode at the MeNB for PDCP transfer to en-gNB. | YES | ignore |
| >>>>>Bearer Type | O |  | 9.2.92 |  | YES | ignore |
| >>>>>Ethernet Type | O |  | 9.2.157 |  | YES | ignore |
| >>>>*PDCP not present in SN* |  |  |  | This choice tag is used if the *PDCP at SgNB* IE in the *EN-DC Resource Configuration* IE is set to the value "present". |  |  |
| >>>>>Requested SCG E-RAB Level QoS Parameters | M |  | E-RAB Level QoS Parameters 9.2.9 | Includes necessary E-RAB level QoS parameters requested to be provided by the SCG. | – |  |
| >>>>>MeNB UL GTP Tunnel Endpoint at PDCP | M |  | GTP Tunnel Endpoint 9.2.1 | MeNB endpoint of the X2-U transport bearer. For delivery of UL PDCP PDUs. | – |  |
| >>>>>Secondary MeNB UL GTP Tunnel Endpoint at PDCP | O |  | GTP Tunnel Endpoint 9.2.1 | MeNB endpoint of the X2-U transport bearer. For delivery of UL PDCP PDUs in case of PDCP duplication. | – |  |
| >>>>>RLC Mode | M |  | RLC Mode9.2.119 | Indicates the RLC mode to be used in the assisting node. | – |  |
| >>>>>UL Configuration | C-ifMCGandSCGpresent |  | 9.2.118 | Information about UL usage in the en-gNB. | – |  |
| >>>>>UL PDCP SN Length | O |  | PDCP SN Length9.2.133 | Indicates the PDCP SN length of the bearer for the UL. | YES | ignore |
| >>>>>DL PDCP SN Length | O |  | PDCP SN Length9.2.133 | Indicates the PDCP SN length of the bearer for the DL. | YES | ignore |
| >>>>>Duplication activation | O |  | 9.2.137 | Indicated the initial staus of PDCP duplication. | YES | ignore |
| **>E-RABs To Be Modified List** |  | *0..1* |  |  | – |  |
| **>>E-RABs To Be Modified Item** |  | *1 .. <maxnoofBearers>* |  |  | EACH | ignore |
| >>>E-RAB ID | M |  | 9.2.23 |  | – |  |
| >>>EN-DC Resource Configuration | M |  | EN-DC Resource Configuration9.2.108 | Indicates the PDCP and Lower Layer MCG/SCG configuration. | – |  |
| >>>CHOICE *Resource Configuration* | M |  |  |  |  |  |
| >>>>*PDCP present in SN* |  |  |  | This choice tag is used if the *PDCP at SgNB* IE in the *EN-DC Resource Configuration* IE is set to the value "present". |  |  |
| >>>>>Full E-RAB Level QoS Parameters | O |  | E-RAB Level QoS Parameters 9.2.9 | Includes E-RAB level QoS parameters to be modified as received on S1-MME | – |  |
| >>>>>Maximum MCG admittable E-RAB Level QoS Parameters | O |  | GBR QoS Information 9.2.10 | Includes the GBR QoS information admittable by the MCG | – |  |
| >>>>>MeNB GTP Tunnel Endpoint at MCG | O |  | GTP Tunnel Endpoint 9.2.1 | MeNB endpoint of the X2-U transport bearer at MCG. For delivery of DL PDCP PDUs. | – |  |
| >>>>>S1 UL GTP Tunnel Endpoint | O |  | GTP Tunnel Endpoint 9.2.1 | SGW endpoint of the S1-U transport bearer. For delivery of UL PDUs from the en-gNB. | – |  |
| >>>>>RLC Status | O |  | 9.2.131 | Indicates the RLC has been re-established.. |  |  |
| >>>>*PDCP not present in SN* |  |  |  | This choice tag is used if the *PDCP at SgNB* IE in the *EN-DC Resource Configuration* IE is set to the value "not present". |  |  |
| >>>>>Requested SCG E-RAB Level QoS Parameters | O |  | E-RAB Level QoS Parameters 9.2.9 | Includes E-RAB level QoS parameters requested to be provided by the SCG. | – |  |
| >>>>>MeNB UL GTP Tunnel Endpoint at PDCP | O |  | GTP Tunnel Endpoint 9.2.1 | MeNB endpoint of the X2-U transport bearer. For delivery of UL PDCP PDUs. | – |  |
| >>>>>UL Configuration | O |  | 9.2.118 | Information about UL usage in the en-gNB. | – |  |
| >>>>>UL PDCP SN Length | O |  | PDCP SN Length9.2.133 | Shall be ignored by the en-gNB if received. | YES | ignore |
| >>>>>DL PDCP SN Length | O |  | PDCP SN Length9.2.133 | Shall be ignored by the en-gNB if received. | YES | ignore |
| >>>>>Secondary MeNB UL GTP Tunnel Endpoint at PDCP | O |  | GTP Tunnel Endpoint 9.2.1 | MeNB endpoint of the X2-U transport bearer. For delivery of UL PDCP PDUs in case of PDCP duplication. | YES | ignore |
| **>E-RABs To Be Released List** |  | *0..1* |  |  | – |  |
| **>>E-RABs To Be Released Item** |  | *1 .. <maxnoofBearers>* |  |  | EACH | ignore |
| >>E-RAB ID | M |  | 9.2.23 |  | – |  |
| >>>EN-DC Resource Configuration | M |  | EN-DC Resource Configuration9.2.108 | Indicates the PDCP and Lower Layer MCG/SCG configuration. | – |  |
| >>>CHOICE *Resource Configuration* | M |  |  |  |  |  |
| >>>>*PDCP present in SN* |  |  |  | This choice tag is used if the *PDCP at SgNB* IE in the *EN-DC Resource Configuration* IE is set to the value "present". |  |  |
| >>>>>DL Forwarding GTP Tunnel Endpoint | O |  | GTP Tunnel Endpoint 9.2.1 | Identifies the X2 transport bearer used for forwarding of DL PDUs | – |  |
| >>>>>UL Forwarding GTP Tunnel Endpoint | O |  | GTP Tunnel Endpoint 9.2.1 | Identifies the X2 transport bearer. used for forwarding of UL PDUs | – |  |
| >>>>*PDCP not present in SN* |  |  |  | This choice tag is used if the *PDCP at SgNB* IE in the *EN-DC Resource Configuration* IE is set to the value "not present". |  |  |
| >Subscriber Profile ID for RAT/Frequency priority | O |  | 9.2.25 |  | YES | ignore |
| >Additional RRM Policy Index | O |  | 9.2.25a |  | YES | ignore |
| MeNB to SgNB Container | O |  | OCTET STRING | Includes the *CG-ConfigInfo* message as defined in TS 38.331 [31]. | YES | reject |
| MeNB UE X2AP ID Extension | O |  | Extended eNB UE X2AP ID9.2.86 | Allocated at the MeNB | YES | reject |
| MeNB Resource Coordination Information | O |  | 9.2.116 | Information used to coordinate resources utilisation between MeNB and en-gNB. | YES | ignore |
| Requested split SRBs | O |  | ENUMERATED (srb1, srb2, srb1&2, ...) | Indicates that resources for Split SRB are requested. | YES | ignore |
| Requested split SRBs release | O |  | ENUMERATED (srb1, srb2, srb1&2, ...) | Indicates that resources for Split SRB are requested to be released. | YES | ignore |
| Desired Activity Notification Level | O |  | 9.2.141 |  | YES | ignore |
| Location Information at SgNB reporting | O |  | ENUMERATED (pscell, ...) | Indicates that the user’s location information is to be provided. | YES | ignore |
| MeNB Cell ID | O |  | ECGI9.2.14 | Indicates the cell ID for PCell in MeNB. | YES | ignore |
| Requested Fast MCG recovery via SRB3 | O |  | ENUMERATED (true, ...) | Indicates that the resources for fast MCG recovery via SRB3 are requested. | YES | ignore |
| Requested Fast MCG recovery via SRB3 Release | O |  | ENUMERATED (true, ...) | Indicates that the resources for fast MCG recovery via SRB3 are requested to be released. | YES | ignore |
| SN triggered  | O |  | ENUMERATED (True, ...) |  | YES | ignore |
| IAB Node Indication | O |  | ENUMERATED (true, ...) |  | YES | reject |
| Conditional PSCell Modification Information Request | O |  |  |  | YES | ignore |
| >Maximum Number of PSCells To Prepare | O |  | INTEGER (1..FFS, ...) | Indicates the maximum number of PSCells that the target SN may prepare. |  |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofBearers | Maximum no. of E-RABs. Value is 256 |
| maxnoofPSCellCandidate | Maximum no. of PSCell candidates for cancellation. Value is FFS |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifMCGandSCGpresent | This IE shall be present if, for the E-RAB requested to be added, the *MCG resources* and *SCG resources* IEs in the *EN-DC Resource Configuration* IE are set to the value "present". |
| ifMCGpresent | This IE shall be present if, for the E-RAB requested to be added, the *MCG resources* IE in the *EN-DC Resource Configuration* IE is set to the value "present". |
| C-ifMCGandSCGpresent\_GBR | This IE shall be present if, for the E-RAB requested to be added, the *MCG resources* and *SCG resources* IEs in the *EN-DC Resource Configuration* IE are set to the value "present", and *GBR QoS Information* IE is present in *Full E-RAB Level QoS Parameters* IE. |

#### 9.1.4.xx CPC CANCEL

This message is sent by the MeNB to the en-gNB to inform the cancellation of a list of prepared PSCells in the target en-gNB during a Conditional PSCell Change.

Direction: MeNB → en-gNB.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.13 |  | YES | reject |
| MeNB UE X2AP ID | M |  | eNB UE X2AP ID9.2.24 | Allocated at the MeNB. | YES | ignore |
| SgNB UE X2AP ID | M |  | en-gNB UE X2AP ID9.2.100 | Allocated at the en-gNB. | YES | ignore |
| Cause | M |  | 9.2.6 |  | YES | ignore |
| Target en-gNB ID Information | M |  | 9.2.102 |  | YES | reject |
| CPAC Cancellation Request | O |  |  |  | YES | reject |
| >CPAC Cancellation Indicator | M |  | ENUMERATED (true, ...) |  |  |  |
| >Cancelled PSCell ID List |  | 1 |  |  |  |  |
| >>Cancelled PSCell ID Item |  | 1 .. <*maxnoofPSCellCandidate*> |  |  |  |  |
| >>>PSCell ID | M |  | NR CGI 9.2.111 |  |  |  |

**------------------------------------------------End of change--------------------------------------------------**