3GPP TSG-RAN WG3 Meeting #107bis-e R3-20xxxx

20 - 30 April 2020, E-Meeting

**Agenda item: 13.2.1.2.**

**Source: Nokia, Nokia Shanghai Bell**

**Title: (TP for NR-IAB BL CR for TS 38.473) BH RLC channel mapping configuration in Donor-DU and intermediate IAB nodes**

**WID/SID: NR\_IAB-Core - Release 16**

**Document for: Discussion and Decision**

# 1 Introduction

This is the Stage-3 TP per CB # 6\_Email\_IAB\_bearer\_mapping ([1]).

# References

[1] R3-202478, Summary of offline discussion on CB # 6\_Email\_IAB\_bearer\_mapping

**Proposed TP for TS38.473 BL CR:**

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## 8.3 UE Context Management procedures

### 8.3.1 UE Context Setup

#### 8.3.1.1 General

The purpose of the UE Context Setup procedure is to establish the UE Context including, among others, SRB, DRB and BH RLC Channel configuration. The procedure uses UE-associated signalling.

#### 8.3.1.2 Successful Operation



Figure 8.3.1.2-1: UE Context Setup Request procedure: Successful Operation

>>> Unaffected parts skipped <<<

If the *BH RLC Channel To Be Setup List* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *BH RLC channel mapping Information* IE is included in the *BH RLC Channel To Be Setup Item IEs* IE for a BH RLC Channel, the gNB-DU shall, if supported, process the *BH RLC channel mapping Information* IE in the following way:

 - if the *Donor-DU BH RLC channel mapping information* IE is included, the gNB-DU shall add the mapping configuration in the BH RLC channel mapping configuration table based on the presence of the *Donor-DU BH RLC channel mapping information To Add* IE, and remove the mapping configuration from the BH RLC channel mapping configuration table based on the presence of the *Donor-DU BH RLC channel mapping information To Remove* IE. If the received mapping configuration contains information for an existing mapping configuration, the gNB-DU shall replace the previously stored mapping configuration with the received mapping configuration. The gNB-DU shall use the BH RLC channel mapping configuration table to map the related traffic to the associated BH RLC channel, and use the received BAP Routing ID to configure the BAP for the related DL traffic.

- if the *Intermediate IAB BH RLC channel mapping information* IE is included, the gNB-DU shall add the mapping configuration in the BH RLC channel mapping configuration table based on the presence of the *Intermediate IAB BH RLC channel mapping information To Add* IE, and remove the mapping configuration from the BH RLC channel mapping configuration table based on the presence of the *Intermediate IAB BH RLC channel mapping information To Remove* IE. If the received mapping configuration contains information for an existing mapping configuration, the gNB-DU shall replace the previously stored mapping configuration with the received mapping configuration. The gNB-DU shall use the BH RLC channel mapping configuration table to map the related traffic to the associated BH RLC channel, and use the received BAP Routing ID to configure the BAP for the related DL traffic.

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### 8.3.4 UE Context Modification (gNB-CU initiated)

#### 8.3.4.1 General

The purpose of the UE Context Modification procedure is to modify the established UE Context, e.g., establishing, modifying and releasing radio resources. This procedure is also used to command the gNB-DU to stop data transmission for the UE for mobility (see TS 38.401 [4]). The procedure uses UE-associated signalling.

#### 8.3.4.2 Successful Operation



Figure 8.3.4.2-1: UE Context Modification procedure. Successful operation

>>> Unaffected parts skipped <<<

If the *BH RLC Channel To Be Setup List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *BH RLC channel mapping Information* IE is included in the *BH RLC Channel To Be Setup Item IEs* IE for a BH RLC Channel, the gNB-DU shall, if supported, process the *BH RLC channel mapping Information* IE follow the behaviour described for the UE Context Setup procedure.

If the *BH RLC Channel To Be Modified List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *BH RLC channel mapping Information* IE is included in the *BH RLC Channel To Be Setup Item IEs* IE for a BH RLC Channel, the gNB-DU shall, if supported, process the *BH RLC channel mapping Information* IE follow the behaviour described for the UE Context Setup procedure.

If the *BH RLC Channel To Be Released List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall release the BH RLC Channels in the list.

If two *UL UP TNL Information* IEs are included in UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU shall include two *DL UP TNL Information* IEs in UE CONTEXT MODIFICATION RESPONSE message and setup two RLC entities for the indicated DRB. gNB-CU and gNB-DU use the *UL UP TNL Information* IEs and *DL UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2]. The first *UP TNL Information* IE of the two *UP TNL Information* IEs is for the primary path*.*

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## 8.x.1 BH BAP Configuration Procedure

### 8.x.1.1 General

The BH BAP Configuration Procedure is initiated by the gNB-CU in order to configure the DL/UL routing information and/or BH RLC Channel mapping information needed for the gNB-DU. The procedure uses non-UE associated signalling.

### 8.x.1.2 Successful Operation



Figure 8.x.2-1: BH BAP Information procedure: Successful Operation

The gNB-CU initiates the procedure by sending BH BAP CONFIGURATION message to the gNB-DU. The gNB-DU replies to the gNB-CU with BH BAP CONFIGURATION ACKNOWLEDGE.

If *BH Routing Information Added List* IE is included in the BH BAP CONFIGURATION message, the gNB-DU shall, if supported, store the BH routing information from this IE and use it for DL/UL traffic forwarding. If *BH Routing Information Added List* IE contains information for an existing BAP Routing ID, the gNB-DU shall, if supported, replace the previously stored routing information for this BAP Routing ID with the corresponding information in the *BH Routing Information Added List* IE.

If *BH Routing Information Removed List* IE is included in the BH BAP CONFIGURATION message, the gNB-DU shall, if supported, remove the BH routing information according to such IE.

If the *BH RLC channel mapping Information* IE is included in the BH BAP CONFIGURATION message, the gNB-DU shall, if supported, process the *BH RLC channel mapping Information* IE follow the behaviour described for the UE Context Setup procedure.

### 8.x.1.3 Abnormal Conditions

Not applicable.

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# 9 Elements for F1AP Communication

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### 9.2.2 UE Context Management messages

#### 9.2.2.1 UE CONTEXT SETUP REQUEST

This message is sent by the gNB-CU to request the setup of a UE context.

Direction: gNB-CU → gNB-DU.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU UE F1AP ID | M  |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID  | O |  | 9.3.1.5 |  | YES | ignore |
| SpCell ID | M |  | NR CGI9.3.1.12 | Special Cell as defined in TS 38.321 [16]. For handover case, this IE is considered as target cell. | YES | reject |
| ServCellIndex | M |  | INTEGER (0..31,...) |  | YES | reject |
| SpCell UL Configured | O |  | Cell UL Configured9.3.1.33 |  | YES | ignore |
| CU to DU RRC Information | M |  | 9.3.1.25 |  | YES | reject |
| **Candidate SpCell List** |  | *0..1* |  |  | YES | ignore |
| **>Candidate SpCell Item IEs** |  | *1 .. <maxnoofCandidateSpCells>* |  |  | EACH | ignore |
| >>Candidate SpCell ID | M |  | NR CGI9.3.1.12 | Special Cell as defined in TS 38.321 [16] | - |  |
| DRX Cycle  | O |  | DRX Cycle 9.3.1.24 |  | YES | ignore |
| Resource Coordination Transfer Container | O |  | OCTET STRING | Includes the *MeNB Resource Coordination Information* IE as defined in subclause 9.2.116 of TS 36.423 [9] for EN-DC case or *MR-DC Resource Coordination Information* IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases. | YES | ignore |
| **SCell To Be Setup List** |  | *0..1* |  |  | YES | ignore |
| **>SCell to Be Setup Item IEs** |  | *1.. <maxnoofSCells>* |  |  | EACH | ignore |
| >>SCell ID | M |  | NR CGI9.3.1.12 | SCell Identifier in gNB | - |  |
| >>SCellIndex | M |  | INTEGER (1..31) |  | - |  |
| >>SCell UL Configured | O |  | Cell UL Configured9.3.1.33 |  | - |  |
| >>servingCellMO | O |  | INTEGER (1..64) |  | YES | ignore |
| **SRB to Be Setup List** |  | *0..1* |  |  | YES | reject |
| **>SRB to Be Setup Item IEs** |  | *1 .. <maxnoofSRBs>* |  |  | EACH | reject |
| >>SRB ID | M |  | 9.3.1.7 |  | - |  |
| >>Duplication Indication | O |  | ENUMERATED (true, ..., false) | If included, it should be set to true. | - |  |
| **DRB to Be Setup List** |  | *0..1* |  |  | YES | reject |
| **>DRB to Be Setup Item IEs** |  | *1 .. <maxnoofDRBs>*  |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.8 |  | - |  |
| >>CHOICE QoS Information | M |  |  |  | - |  |
| >>>E-UTRAN QoS | M |  | 9.3.1.19 | Shall be used for EN-DC case to convey E-RAB Level QoS Parameters | - |  |
| **>>>DRB Information** |  | *1* |  | Shall be used for NG-RAN cases | YES | ignore |
| >>>>DRB QoS | M |  | 9.3.1.45 |  | - |  |
| >>>>S-NSSAI | M |  | 9.3.1.38 |  | - |  |
| >>>>Notification Control | O |  | 9.3.1.56 |  | - |  |
| **>>>>Flows Mapped to DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | - |  |
| >>>>>QoS Flow Identifier | M |  | 9.3.1.63 |  | - |  |
| >>>>>QoS Flow Level QoS Parameters | M |  | 9.3.1.45 |  | - |  |
| >>>>>QoS Flow Mapping Indication | O |  | 9.3.1.72 |  | YES | ignore |
| **>>UL UP TNL Information to be setup List** |  | *1* |  |  | - |  |
| **>>> UL UP TNL Information to Be Setup Item IEs** |  | *1 .. <maxnoofULUPTNLInformation>* |  |  | - |  |
| >>>>UL UP TNL Information | M |  | UP Transport Layer Information9.3.2.1 | gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs. | - |  |
| >>>>UL BH Information | O |  | 9.3.1.y |  | - |  |
| >> RLC Mode | M |  | 9.3.1.27 |  | - |  |
| >> UL Configuration | O |  | UL Configuraiton 9.3.1.31 | Information about UL usage in gNB-DU.  | - |  |
| >>Duplication Activation | O |  | 9.3.1.36 | Information on the initial state of CA based UL PDCP duplication  | - |  |
| >> DC Based Duplication Configured | O |  | ENUMERATED (true, ..., false) | Indication on whether DC based PDCP duplication is configured or not. If included, it should be set to true. | YES | reject |
| >>DC Based Duplication Activation | O |  | Duplication Activation9.3.1.36 | Information on the initial state of DC basedUL PDCP duplication | YES | reject |
| >>DL PDCP SN length | M |  | ENUMERATED (12bits, 18bits, ...) |  | YES | ignore |
| >>UL PDCP SN length | O |  | ENUMERATED (12bits, 18bits, ...) |  | YES | ignore |
| Inactivity Monitoring Request  | O |  | ENUMERATED (true, ...) |  | YES | reject |
| RAT-Frequency Priority Information | O |  | 9.3.1.34 |  | YES | reject |
| RRC-Container | O |  | 9.3.1.6 | Includes the *DL-DCCH-Message* IE as defined in subclause 6.2 of TS 38.331 [8], encapsulated in a PDCP PDU. | YES | ignore |
| Masked IMEISV | O |  | 9.3.1.55 |  | YES | ignore |
| Serving PLMN | O |  | PLMN ID9.3.1.14 | Indicates the PLMN serving the UE. | YES | ignore |
| gNB-DU UE Aggregate Maximum Bit Rate Uplink | C-ifDRBSetup |  | Bit Rate 9.3.1.22 | The gNB-DU UE Aggregate Maximum Bit Rate Uplink is to be enforced by the gNB-DU. | YES | ignore |
| RRC Delivery Status Request | O |  | ENUMERATED (true, …) | Indicates whether RRC DELIVERY REPORT procedure is requested for the RRC message. | YES | ignore |
| Resource Coordination Transfer Information | O |  | 9.3.1.73 |  | YES | ignore |
| servingCellMO | O |  | INTEGER (1..64, ...) |  | YES | ignore |
| New gNB-CU UE F1AP ID | O |  | gNB-CU UE F1AP ID9.3.1.4 |  | YES | reject |
| RAN UE ID | O |  | OCTET STRING (SIZE (8)) |  | YES | ignore |
| Trace Activation | O |  | 9.3.1.88 |  | YES | ignore |
| Additional RRM Policy Index | O |  | 9.3.1.90 |  | YES | ignore |
| **BH RLC Channel to be Setup List** |  | *0..1* |  |  | YES | reject |
| **>BH RLC Channel to be Setup Item IEs** |  | *1 .. <maxnoofBHRLCChannels>*  |  |  | EACH | reject |
| >>BH RLC CH ID | M |  | 9.3.1.x |  | - |  |
| >>CHOICE *BH QoS Information* | M |  |  |  |  |  |
| >>>BH RLC CH QoS | M |  | 9.3.1.45 | Shall be used for SA case. |  |  |
| >>>E-UTRAN BH RLC CH QoS | M |  | 9.3.1.19 | Shall be used for EN-DC case. |  |  |
| >>>Control Plane Traffic Type | M |  | 9.3.1.z |  |  |  |
| >>RLC Mode | M |  | 9.3.1.27 |  | - |  |
| >>BH RLC channel mapping Information | O |  | 9.3.1.b |  | - |  |
| Configured BAP Address | O |  | 9.3.1.v | The BAP address configured for the corresponding child IAB-node. | YES | reject |

**>>>>>>>>>>>>>>> Unchanged parts are skipped<<<<<<<<<<<<<<<<**

#### 9.2.2.7 UE CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU to provide UE Context information changes to the gNB-DU.

Direction: gNB-CU → gNB-DU

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| SpCell ID | O |  | NR CGI9.3.1.12 | Special Cell as defined in TS 38.321 [16]. For handover case, this IE is considered as target cell. | YES | ignore |
| ServCellIndex | O |  | INTEGER (0..31, ...) |  | YES | reject |
| SpCell UL Configured | O |  | Cell UL Configured9.3.1.33 |  | YES | ignore |
| DRX Cycle  | O |  | DRX Cycle 9.3.1.24 |  | YES | ignore |
| CU to DU RRC Information | O |  | 9.3.1.25 |  | YES | reject |
| Transmission Action Indicator | O |  | 9.3.1.11 |  | YES | ignore |
| Resource Coordination Transfer Container | O |  | OCTET STRING | Includes the *MeNB Resource Coordination Information* IE as defined in subclause 9.2.116 of TS 36.423 [9] for EN-DC case or *MR-DC Resource Coordination Information* IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases. | YES | ignore |
| RRC Reconfiguration Complete Indicator | O |  | 9.3.1.30 |  | YES | ignore |
| RRC-Container | O |  | 9.3.1.6 | Includes the *DL-DCCH-Message* IE as defined in subclause 6.2 of TS 38.331 [8], encapsulated in a PDCP PDU. | YES | reject |
| **SCell To Be Setup List** |  | *0..1* |  |  | YES | ignore |
| **>SCell to Be Setup Item IEs** |  | *1.. <maxnoofSCells>* |  |  | EACH | ignore |
| >>SCell ID | M |  | NR CGI9.3.1.12 | SCell Identifier in gNB | - |  |
| >>SCellIndex | M |  | INTEGER (1..31) |  | - |  |
| >>SCell UL Configured | O |  | Cell UL Configured9.3.1.33 |  | - |  |
| >>servingCellMO | O |  | INTEGER (1..64) |  | YES | ignore |
| **SCell To Be Removed List** |  | *0..1* |  |  | YES | ignore |
| **>SCell to Be Removed Item IEs** |  | *1 .. <maxnoofSCells>* |  |  | EACH | ignore |
| >>SCell ID | M |  | NR CGI9.3.1.12 | SCell Identifier in gNB | - |  |
| **SRB to Be Setup List** |  | *0..1* |  |  | YES | reject |
| **>SRB to Be Setup Item IEs** |  | *1..<maxnoofSRBs>* |  |  | EACH | reject |
| >>SRB ID | M |  | 9.3.1.7 |  | - |  |
| >>Duplication Indication | O |  | ENUMERATED (true, ..., false) |  | - |  |
| **DRB to Be Setup List** |  | *0..1* |  |  | YES | reject |
| **>DRB to Be Setup Item IEs** |  | *1 .. <maxnoofDRBs>* |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.8 |  | - |  |
| >>CHOICE QoS Information | M |  |  |  | - |  |
| >>>E-UTRAN QoS | M |  | 9.3.1.19 | Shall be used for EN-DC case to convey E-RAB Level QoS Parameters |  |  |
| **>>>DRB Information** |  | *1* |  | Shall be used for NG-RAN cases | YES | ignore |
| >>>>DRB QoS | M |  | 9.3.1.45 |  | - |  |
| >>>>S-NSSAI | M |  | 9.3.1.38 |  | - |  |
| >>>>Notification Control | O |  | 9.3.1.56 |  | - |  |
| **>>>>Flows Mapped to DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | - |  |
| >>>>>QoS Flow Identifier | M |  | 9.3.1.63 |  | - |  |
| >>>>>QoS Flow Level QoS Parameters | M |  | 9.3.1.45 |  | - |  |
| >>>>>QoS Flow Mapping Indication | O |  | 9.3.1.72 |  | YES | ignore |
| **>>UL UP TNL Information to be setup List**  |  | *1* |  |  | - |  |
| **>>>UL UP TNL Information to Be Setup Item IEs** |  | *1 .. <maxnoofULUPTNLInformation>* |  |  | - |  |
| >>>>UL UP TNL Information | M |  | UP Transport Layer Information9.3.2.1 | gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs. | - |  |
| >>>>UL BH Information | O |  | 9.3.1.y |  | - |  |
| >> RLC Mode | M |  | 9.3.1.27 |  | - |  |
| >>UL Configuration | O |  | UL Configuration 9.3.1.31 | Information about UL usage in gNB-DU.  | - |  |
| >>Duplication Activation | O |  | 9.3.1.36 | Information on the initial state of CA based UL PDCP duplication | - |  |
| >> DC Based Duplication Configured | O |  | ENUMERATED (true, ..., false) | Indication on whether DC based PDCP duplication is configured or not. If included, it should be set to true. | YES | reject |
| >>DC Based Duplication Activation | O |  | Duplication Activation9.3.1.36 | Information on the initial state of DC based UL PDCP duplication  | YES | reject |
| >>DL PDCP SN length | O |  | ENUMERATED (12bits, 18bits, ...) |  | YES | ignore |
| >>UL PDCP SN length | O |  | ENUMERATED (12bits, 18bits, ...) |  | YES | ignore |
| **DRB to Be Modified List** |  | *0..1* |  |  | YES | reject |
| **>DRB to Be Modified Item IEs** |  | *1 .. <maxnoofDRBs>* |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.8 |  | - |  |
| >>CHOICE QoS Information | O |  |  |  | - |  |
| >>>E-UTRAN QoS | M |  | 9.3.1.19 | Used for EN-DC case to convey E-RAB Level QoS Parameters | - |  |
| **>>>DRB Information** |  | *1* |  | Used for NG-RAN cases | YES | ignore |
| >>>>DRB QoS | M |  | 9.3.1.45 |  | - |  |
| >>>>S-NSSAI | M |  | 9.3.1.38 |  | - |  |
| >>>>Notification Control | O |  | 9.3.1.56 |  | - |  |
| **>>>>Flows Mapped to DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | - |  |
| >>>>>QoS Flow Identifier | M |  | 9.3.1.63 |  | - |  |
| >>>>>QoS Flow Level QoS Parameters | M |  | 9.3.1.45 |  | - |  |
| >>>>>QoS Flow Mapping Indication | O |  | 9.3.1.72 |  | YES | ignore |
| **>> UL UP TNL Information to be setup List**  |  | *0..1* |  |  | - |  |
| **>>> UL UP TNL Information to Be Setup Item IEs** |  | *1 .. <maxnoofULUPTNLInformation>* |  |  | - |  |
| >>>>UL UP TNL Information | M |  | UP Transport Layer Information9.3.2.1 | gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs. | - |  |
| >>>>UL BH Information | O |  | 9.3.1.y |  | - |  |
| >>UL Configuration | O |  | UL Configuration 9.3.1.31 | Information about UL usage in gNB-DU.  | - |  |
| >>DL PDCP SN length | O |  | ENUMERATED(12bits,18bits , ...) |  | YES | ignore |
| >>UL PDCP SN length | O |  | ENUMERATED (12bits, 18bits, ...) |  | YES | ignore |
| >>Bearer Type Change | O |  | ENUMERATED (true, …) |  | YES | ignore |
| >> RLC Mode | O |  | 9.3.1.27 |  | YES | ignore |
| >>Duplication Activation | O |  | 9.3.1.36 | Information on the initial state of CA based UL PDCP duplication | YES | reject |
| >> DC Based Duplication Configured | O |  | ENUMERATED (true, …, false) | Indication on whether DC based PDCP duplication is configured or not. | YES | reject |
| >>DC Based Duplication Activation | O |  | 9.3.1.36 | Information on the initial state of DC based UL PDCP duplication  | YES | reject |
| **SRB To Be Released List** |  | *0..1* |  |  | YES | reject |
| **>SRB To Be Released Item IEs** |  | *1.. <maxnoofSRBs>* |  |  | EACH | reject |
| >>SRB ID | M |  | 9.3.1.7 |  |  |  |
| **DRB to Be Released List** |  | *0..1* |  |  | YES | reject |
| **>DRB to Be Released Item IEs** |  | *1 .. <maxnoofDRBs>* |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.8 |  | - |  |
| Inactivity Monitoring Request | O |  | ENUMERATED (true, ...) |  | YES | reject |
| RAT-Frequency Priority Information | O |  | 9.3.1.34 |  | YES | reject |
| DRX configuration indicator | O |  | ENUMERATED(release,...) |  | YES | ignore |
| RLC Failure Indication | O |  | 9.3.1.66 |  | YES | ignore |
| Uplink TxDirectCurrentList Information | O |  | 9.3.1.67 |  | YES | ignore |
| GNB-DU Configuration Query | O |  | ENUMERATED (true, ...) | Used to request the gNB-DU to provide its configuration. | YES | reject |
| gNB-DU UE Aggregate Maximum Bit Rate Uplink | O |  | Bit Rate 9.3.1.22 | The gNB-DU UE Aggregate Maximum Bit Rate Uplink is to be enforced by the gNB-DU. | YES | ignore |
| Execute Duplication | O |  | ENUMERATED (true, ...) | This IE may be sent only if duplication has been configured for the UE. | YES | ignore |
| RRC Delivery Status Request | O |  | ENUMERATED (true, …) | Indicates whether RRC DELIVERY REPORT procedure is requested for the RRC message. | YES | ignore |
| Resource Coordination Transfer Information | O |  | 9.3.1.73 |  | YES | ignore |
| servingCellMO | O |  | INTEGER (1..64, ...) |  | YES | ignore |
| Need for Gap | O |  | ENUMERATED (true, …) | Indicate gap for SeNB configured measurement is requested.It only applied to NE DC scenario. | Yes | ignore |
| Full Configuration | O |  | ENUMERATED (full, ...) |  | YES | reject |
| Additional RRM Policy Index | O |  | 9.3.1.90 |  | YES | ignore |
| Lower Layer Presence Status Change | O |  | 9.3.1.94 |  | Yes | ignore |
| **BH RLC Channel to be Setup List** |  | *0..1* |  |  | YES | reject |
| **>BH RLC Channel to be Setup Item IEs** |  | *1 .. <maxnoofBHRLCChannels>*  |  |  | EACH | reject |
| >>BH RLC CH ID | M |  | 9.3.1.x |  | - |  |
| >>CHOICE *BH QoS information* | M |  |  |  |  |  |
| >>>BH RLC CH QoS | M |  | 9.3.1.45 | Shall be used for SA case. |  |  |
| >>>E-UTRAN BH RLC CH QoS | M |  | 9.3.1.19 | Shall be used for EN-DC case. |  |  |
| >>>Control Plane Traffic Type | M |  | 9.3.1.z |  |  |  |
| >>RLC Mode | M |  | 9.3.1.27 |  | - |  |
| >>BH RLC channel mapping Information | O |  | 9.3.1.b |  | - |  |
| **BH RLC Channel to be Modified List** |  | *0..1* |  |  | YES | reject |
| **>BH RLC Channel to be Modified Item IEs** |  | *1 .. <maxnoofBHRLCChannels>*  |  |  | EACH | reject |
| >>BH RLC CH ID | M |  | 9.3.1.x |  | - |  |
| >>CHOICE *BH QoS information* | O |  |  |  |  |  |
| >>>BH RLC CH QoS | M |  | 9.3.1.45 | Shall be used for SA case. |  |  |
| >>>E-UTRAN BH RLC CH QoS | M |  | 9.3.1.19 | Shall be used for EN-DC case. |  |  |
| >>>Control Plane Traffic Type | M |  | 9.3.1.z |  |  |  |
| >>RLC Mode | O |  | 9.3.1.27 |  | - |  |
| >>BH RLC channel mapping Information | O |  | 9.3.1.b |  | - |  |
| **BH RLC Channel to be Released List** |  | *0..1* |  |  | YES | reject |
| **>BH RLC Channel to be Released Item IEs** |  | *1 .. <maxnoofBHRLCChannels >* |  |  | EACH | reject |
| >>BH RLC CH ID | M |  | 9.3.1.x |  | - |  |
| Configured BAP Address | O |  | 9.3.1.v | The BAP address configured for the corresponding child IAB-node. | YES | reject |

-------------------------------------------Next Change -------------------------------------------

### 9.2.x IAB messages

#### 9.2.x.1 BH BAP CONFIGURATION

This message is sent by the gNB-CU to provide the BH routing information and/or BH RLC Channel mapping information to the gNB-DU.

Direction: gNB-CU → gNB-DU

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| Transaction ID | M |  | 9.3.1.23 |  | YES | reject |
| **BH Routing Information Added List** |  | *0...1* |  |  | YES | ignore |
| **>BH Routing** **Information Added List** **Item** |  | *1.. <maxnoofRoutingEntries>* |  |  | EACH | ignore |
| >>BAP Routing ID | M |  | 9.3.1.u |  | - |  |
| >>Next-Hop BAPAddress | M |  | 9.3.1.v | Indicates the BAP address of the next hop IAB-node or IAB-donor-DU. | - |  |
| **BH Routing Information Removed List** |  | *0...1* |  |  | YES | ignore |
| **>BH Routing** **Information Removed****List Item** |  | *1.. <maxnoofRoutingEntries>* |  |  | EACH | ignore |
| >>BAP Routing ID | M |  | 9.3.1.u |  | - |  |
| BH RLC channel mapping Information | O |  | 9.3.1.b |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofRoutingEntries | Maximum no. of routing entries, the maximum value is 1024. |

#### 9.2.x.2 BH BAP CONFIGURATION ACKNOWLEDGE

This message is sent by the gNB-DU as a response to a BH BAP CONFIGURATION message.

Direction: gNB-DU → gNB-CU

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| Transaction ID | M |  | 9.3.1.23 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

-------------------------------------------Next Change -------------------------------------------

#### 9.3.1.b BH RLC channel mapping Information

This IE includes information used by the gNB-DU to perform the BH RLC channel mapping.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE BH RLC channel mapping Information |  |  |  |  |
| **>Donor-DU BH RLC channel mapping information** |  |  |  |  |
| >>Donor-DU BH RLC channel mapping information To Add | O | 9.3.1.b1 |  | This IE indicates the new mapping configuration to be added in the IAB-Donor-DU |
| >>Donor-DU BH RLC channel mapping information To Remove  | O | 9.3.1.b1 |  | This IE indicates the mapping configuration to be removed in the IAB-Donor-DU |
| **>Intermediate IAB BH RLC channel mapping information** |  |  |  |  |
| >>Intermediate IAB BH RLC channel mapping information To Add  | O | 9.3.1.b2 |  | This IE indicates the new mapping configuration to be added in the intermediate IAB-DU |
| >>Intermediate IAB BH RLC channel mapping information To Remove  | O | 9.3.1.b2 |  | This IE indicates the mapping configuration to be removed in the intermediate IAB-DU |

#### 9.3.1.b1 Donor DU BH RLC channel mapping Information

This IE includes information used by the IAB-Donor-DU to perform the BH RLC channel mapping.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Donor-DU BH RLC channel mapping information  |  |  |  |  |
| >Donor-DU BH RLC channel mapping information Item |  | 0.. <maxnoofAggregatedTraffic> |  |  |
| >>Destination IP Address  | M |  | 9.3.2.3 | This IE indicates the destination IP address of the DL traffic. |
| >>DS Information List |  | 0.. <maxnoofDSInfo> |  |  |
| >>>DSCP | O |  | BIT STRING (SIZE(6)) | This IE indicates the DS information of the DL traffic. |
| >>IPv6 Flow Label | O |  | BIT STRING (SIZE(20)) | This IE indicates the IPv6 Flow label of the DL traffic. |
| >>BAP Routing ID | M |  | 9.3.1.u | This IE indicates the BAP Routing ID to be used for the related DL traffic. |
| >>Next-Hop BAP address | O |  | 9.3.1.v |  |
| >>BH RLC CH ID | O |  | 9.3.1.x |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| *maxnoofAggregatedTraffic* | Maximum no. of traffic aggregated into one BH RLC CH, the maximum value is FFS. |
| *maxnoofDSInfo* | Maximum no. of DSCP information related to a destination IP address can share one BH RLC CH, the maximum value is FFS. |

#### 9.3.1.b2 Intermediate IAB DU BH RLC channel mapping Information

This IE includes information used by the IAB-DU to perform the BH RLC channel mapping.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Intermediate IAB BH RLC channel mapping information  |  |  |  |  |
| >Intermediate IAB BH RLC channel mapping information Item |  | 0.. <maxnoofAggregatedTraffic> |  |  |
| >>Mapped BH RLC CH ID List |  | 1.. <maxnoofAggregatedBHRLCCH > |  |  |
| >>>BH RLC CH ID |  | 9.3.1.x |  |  |
| >>Prior-Hop BAP Address | O | 9.3.1.v |  |  |
| >>Next-Hop BAP Address | O | 9.3.1.v |  |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| *maxnoofAggregatedTraffic* | Maximum no. of traffic aggregated into one BH RLC CH, the maximum value is FFS. |
| *maxnoofAggregatedBHRLCCH* | Maximum no. of BH RLC channels to be mapped to a BH RLC channel, the maximum value is FFS. |

-------------------------------------------Start of Change -------------------------------------------

### 9.4.4 PDU Definitions

Unaffected parts skipped

 BHChannels-ToBeSetup-Item,

 BHChannels-Setup-Item,

 BHChannels-FailedToBeSetup-Item,

 BHChannels-ToBeModified-Item,

 BHChannels-ToBeReleased-Item,

 BHChannels-ToBeSetupMod-Item,

 BHChannels-FailedToBeModified-Item,

 BHChannels-FailedToBeSetupMod-Item,

 BHChannels-Modified-Item,

 BHChannels-SetupMod-Item,

 BHChannels-Required-ToBeReleased-Item,

 BAPAddress,

 BAPPathID,

 BHRLCchannelMappingInfo,

 BAPRoutingID,

 BH-Routing-Information-Added-List-Item,

 BH-Routing-Information-Removed-List-Item,

 Child-Nodes-List,

 Child-Nodes-List-Item,

 Child-Node-Cells-List,

 Child-Node-Cells-List-Item,

 Activated-Cells-to-be-Updated-List,

 Activated-Cells-to-be-Updated-List-Item,

 UL-BH-Non-UP-Traffic-Mapping

Unaffected parts skipped

 id-BHChannels-ToBeSetup-List,

 id-BHChannels-ToBeSetup-Item,

 id-BHChannels-Setup-List,

 id-BHChannels-Setup-Item,

 id-BHChannels-ToBeModified-Item,

 id-BHChannels-ToBeModified-List,

 id-BHChannels-ToBeReleased-Item,

 id-BHChannels-ToBeReleased-List,

 id-BHChannels-ToBeSetupMod-Item,

 id-BHChannels-ToBeSetupMod-List,

 id-BHChannels-FailedToBeSetup-Item,

 id-BHChannels-FailedToBeSetup-List,

 id-BHChannels-FailedToBeModified-Item,

 id-BHChannels-FailedToBeModified-List,

 id-BHChannels-FailedToBeSetupMod-Item,

 id-BHChannels-FailedToBeSetupMod-List,

 id-BHChannels-Modified-Item,

 id-BHChannels-Modified-List,

 id-BHChannels-SetupMod-Item,

 id-BHChannels-SetupMod-List,

 id-BHChannels-Required-ToBeReleased-Item,

 id-BHChannels-Required-ToBeReleased-List,

 id-BAPAddress,

 id-ConfiguredBAPAddress,

 id-BAPPathID,

 id-BH-RLCChannelMapping-Information,

 id-BAPRoutingID,

 id-BH-Routing-Information-Added-List,

 id-BH-Routing-Information-Added-List-Item,

 id-BH-Routing-Information-Removed-List,

 id-BH-Routing-Information-Removed-List-Item,

 id-UL-BH-Non-UP-Traffic-Mapping,

 id-Child-Nodes-List,

 id-Child-Nodes-List-Item,

 id-Activated-Cells-to-be-Updated-List,

 id-Activated-Cells-to-be-Updated-List-Item,

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- IAB PROCEDURES

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- BH BAP CONFIGURATION

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

BHBAPConfiguration ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {BHBAPConfiguration-IEs} } }

BHBAPConfiguration-IEs F1AP-PROTOCOL-IES ::= {

 { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory}|

 { ID id-BH-Routing-Information-Added-List CRITICALITY ignore TYPE BH-Routing-Information-Added-List PRESENCE optional}|

 { ID id-BH-Routing-Information-Removed-List CRITICALITY ignore TYPE BH-Routing-Information-Removed-List PRESENCE optional}|

 { ID id-BH-RLCChannelMapping-Information CRITICALITY ignore TYPE BHRLCchannelMappingInfo PRESENCE optional}, ...

}

BH-Routing-Information-Added-List ::= SEQUENCE (SIZE(1.. maxnoofRoutingEntries)) OF ProtocolIE-SingleContainer { { BH-Routing-Information-Added-List-ItemIEs } }

BH-Routing-Information-Removed-List ::= SEQUENCE (SIZE(1.. maxnoofRoutingEntries)) OF ProtocolIE-SingleContainer { { BH-Routing-Information-Removed-List-ItemIEs } }

BH-Routing-Information-Added-List-ItemIEs F1AP-PROTOCOL-IES ::= {

 { ID id-BH-Routing-Information-Added-List-Item CRITICALITY ignore TYPE BH-Routing-Information-Added-List-Item PRESENCE optional},

 ...

}

BH-Routing-Information-Removed-List-ItemIEs F1AP-PROTOCOL-IES ::= {

 { ID id-BH-Routing-Information-Removed-List-Item CRITICALITY ignore TYPE BH-Routing-Information-Removed-List-Item PRESENCE optional},

 ...

}

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- BH BAP CONFIGURATION ACKNOWLEDGE

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

BHBAPConfigurationAcknowledge ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {BHBAPConfigurationAcknowledge-IEs} } }

BHBAPConfigurationAcknowledge-IEs F1AP-PROTOCOL-IES ::= {

 { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory}|

 { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional},

 ...

}

### 9.4.5 Information Element Definitions

Unaffected parts skipped

 maxnoofAdditionalSIBs,

 maxnoofUACPLMNs,

 maxnoofUACperPLMN,

 maxCellingNBDU,

 maxnoofTLAs,

 maxnoofNonUPTrafficMappings,

 maxnoofServingCells,

 maxnoofServedCellsIAB,

 maxnoofChildIABNodes,

 maxnoofIABSTCInfo,

 maxnoofSymbols,

 maxnoofDUFSlots,

 maxnoofHSNASlots

 maxnoofAggregatedTraffic,

 maxnoofDSInfo,

 maxnoofAggregatedBHRLCCH

FROM F1AP-Constants

Unaffected parts skipped

-- B

BAPAddress ::= BIT STRING (SIZE(10))

BAPPathID ::= BIT STRING (SIZE(10))

BAPRoutingID ::= BIT STRING (SIZE(20))

BitRate ::= INTEGER (0..4000000000000,...)

BearerTypeChange ::= ENUMERATED {true, ...}

BHRLCchannelMappingInfo ::= CHOICE {

 donorDUBHRLCchannelMappingInfo DonorDUBHRLCchannelMappingInfo,

 intermediateIABBHRLCchannelMappingInfo IntermediateIABBHRLCchannelMappingInfo,

 choice-extension ProtocolIE-SingleContainer { { BHRLCchannelMappingInfo-ExtIEs} }

}

BHRLCchannelMappingInfo-ExtIEs F1AP-PROTOCOL-IES ::= {

 ...

}

DonorDUBHRLCchannelMappingInfo ::= SEQUENCE {

 donorDUBHRLCchannelMappingInfoToAdd DonorDUBHRLCchannelMappingInfo,

 donorDUBHRLCchannelMappingInfoToRemove DonorDUBHRLCchannelMappingInfo,

 iE-Extensions ProtocolExtensionContainer { { DonorDUBHRLCchannelMappingInfo-ItemExtIEs} } OPTIONAL,

 ...

}

DonorDUBHRLCchannelMappingInfo-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DonorDUBHRLCchannelMappingInfo ::= SEQUENCE (SIZE(0..maxnoofAggregatedTraffic)) OF DonorDUBHRLCchannelMappingInfo-Item

DonorDUBHRLCchannelMappingInfo-Item ::= SEQUENCE {

 destIPAddress TransportLayerAddress,

 dsInformationList DSInformationList,

 iPv6FlowLabel BIT STRING (SIZE (20)) OPTIONAL,

 bAPRoutingID BAPRoutingID,

 nextHopBAPAddress BAPAddress OPTIONAL,

 bHRLCChannelID BHChannelID OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { DonorDUBHRLCchannelMappingInfo-ItemExtIEs} } OPTIONAL,

 ...

}

DonorDUBHRLCchannelMappingInfo-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

DSInformationList ::= SEQUENCE (SIZE(0..maxnoofDSInfo)) OF DSCP

DSCP ::= BIT STRING (SIZE (6))

IntermediateIABMappingInfo ::= SEQUENCE {

 intermediateIABMappingInfoToAdd IntermediateIABMappingInfo OPTIONAL,

 intermediateIABMappingInfoToRemove IntermediateIABMappingInfo OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { IntermediateIABMappingInfo-ItemExtIEs} } OPTIONAL,

 ...

}

IntermediateIABMappingInfo-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

IntermediateIABMappingInfo ::= SEQUENCE (SIZE(0..maxnoofAggregatedTraffic)) OF IntermediateIABMappingInfo-Item

IntermediateIABMappingInfo-Item ::= SEQUENCE {

 mappedBHRLCCHIDList MappedBHRLCCHIDList,

 priorHopBAPAddress BAPAddress OPTIONAL,

 nextHopBAPAddress BAPAddress OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { IntermediateIABMappingInfo-ItemExtIEs} } OPTIONAL,

 ...

}

IntermediateIABMappingInfo-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

Unaffected parts skipped

BHChannels-ToBeModified-Item ::= SEQUENCE {

 bHChannelID BHChannelID,

 bHQoSInformation BHQoSInformation,

 rLCmode RLCMode OPTIONAL,

 bHRLCchannelMappingInfo BHRLCchannelMappingInfo,

 iE-Extensions ProtocolExtensionContainer { { BHChannels-ToBeModified-ItemExtIEs } } OPTIONAL

}

BHChannels-ToBeModified-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

BHChannels-ToBeReleased-Item ::= SEQUENCE {

 bHChannelID BHChannelID,

 iE-Extensions ProtocolExtensionContainer { { BHChannels-ToBeReleased-ItemExtIEs } } OPTIONAL

}

BHChannels-ToBeReleased-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

BHChannels-ToBeSetup-Item ::= SEQUENCE {

 bHChannelID BHChannelID,

 bHQoSInformation BHQoSInformation,

 rLCmode RLCMode,

 bHRLCchannelMappingInfo BHRLCchannelMappingInfo,

 iE-Extensions ProtocolExtensionContainer { { BHChannels-ToBeSetup-ItemExtIEs } } OPTIONAL

}

BHChannels-ToBeSetup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

-------------------------------------------Next Change -------------------------------------------

### 9.4.7 Constant Definitions

Unaffected parts skipped

maxnoofBHRLCChannels INTEGER ::= 16384

maxnoofRoutingEntries INTEGER ::= 1024

maxnoofIABSTCInfo INTEGER ::= 45

maxnoofSymbols INTEGER ::= 14

maxnoofServingCells INTEGER ::= 32

maxnoofDUFSlots INTEGER ::= 320

maxnoofHSNASlots INTEGER ::= 5120

maxnoofServedCellsIAB INTEGER ::= FFS

maxnoofChildIABNodes INTEGER ::= FFS

maxnoofNonUPTrafficMappings INTEGER ::= 5

maxnoofAggregatedTraffic INTEGER ::= xx1

maxnoofDSInfo INTEGER ::= xx2

maxnoofAggregatedBHRLCCH INTEGER ::= xx3

Unaffected parts skipped

id-IAB-Info-IAB-DU ProtocolIE-ID ::= xxx

id-IAB-Info-IAB-donor-CU ProtocolIE-ID ::= xxx

id-BH-RLCChannelMapping-Information ProtocolIE-ID ::= xxx

-------------------------------------------End of Change -------------------------------------------