**3GPP TSG-RAN WG3 Meeting #115-eR3-222923**

**Online, February 21st – March 3rd 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **13** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network | **X** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | CP-based Congestion Indication for IAB Networks | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2022-03-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | Enabling CP-based congestion detection in IAB Networks | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added a congestion indicator in GNB-DU STATUS INDICATION message.  Added the *F1-C Transfer Path NRDC* IE indication in the UE CONTEXT SETUP REQUEST and UE CONTEXT MODIFICATION REQUEST messages.  Added the *Conditional RRC Message Delivery Indication* IE in the UE CONTEXT MODIFICATION REQUEST message. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | CP-based congestion detection in IAB Networks not supported.  Configuration of F1-C transfer path not supported.  Withholding of the RRCReconfiguration message for IAB intra-donor migration at the parent IAB-DU not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.2.7.1, 8.2.7.2, 8.3.1.2, 8.3.4.2, 9.2.1.15, 9.2.2.1, 9.2.2.7, 9.3.1.x1 (new), 9.3.1.x2 (new), 9.3.1.x3 (new), 9.3.1.x4 (new), 9.4.4, 9.4.5, 9.4.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | Rev1-2: changes during the RAN3#111-e meeting.  Rev3: rebased on TS 38.473 v16.5.0.  Rev4: corrected the meeting number and date.  Rev5: used the newest CR template (CR-Form-v12.1).  Rev6: included the agreements from RAN3#112-e.  Rev7: rebased on TS 38.473 v16.6.0.  Rev8: rebased on TS 38.473 v16.7.0.  Rev9: included R3-216184, agreed at the RAN3#114-e.  Rev10: changed the author of all change marks to ‘Author’.  Rev11: rebased on TS 38.473 v16.8.0.  Rev12: included R3-221450 and R3-220211, agreed at the RAN3#114bis-e.  Rev13: Revised based on the RAN3#115-e agreements. | | | | | | | | |

-------------------------------------------Start of changes-------------------------------------------

### 8.2.7 gNB-DU Status Indication

#### 8.2.7.1 General

The purpose of the gNB-DU Status Indication procedure is informing the gNB-CU that the gNB-DU is overloaded so that overload reduction actions can be applied. This procedure is also used to inform the IAB-donor-CU about a downlink congestion at an IAB-DU or an IAB-donor-DU. The procedure uses non-UE associated signalling.

#### 8.2.7.2 Successful Operation



Figure 8.2.7.2-1: gNB-DU Status Indication procedure

If the *gNB-DU* *Overload Information* IE in the GNB-DU STATUS INDICATION message indicates that the gNB-DU is overloaded, the gNB-CU shall apply overload reduction actions until informed, with a new GNB-DU STATUS INDICATION message, that the overload situation has ceased.

The detailed overload reduction policy is up to gNB-CU implementation.

If the *IAB Congestion Indication* IE is present in the GNB-DU STATUS INDICATION message and only includes the *Child Node Identifier* IE, the gNB-CU shall, if supported, consider that the backhaul link to the child node is congested. If the *IAB Congestion Indication* IE is present in the GNB-DU STATUS INDICATION message and includes both the *Child Node Identifier* IE and the *BH RLC CH ID* IE, the gNB-CU shall, if supported, consider that congestion occurs on the corresponding BH RLC channel(s) over the link towards the node identified by the *Child Node Identifier* IE.

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

-------------------------------------------Next change-------------------------------------------

## 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, BH RLC channel, and SL DRB 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

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

If the *Estimated Arrival Probability* IE is contained in the *Conditional Inter-DU Mobility Information* IE included in the UE CONTEXT SETUP REQUEST message, then the gNB-DU may use the information to allocate necessary resources for the UE.

If the *F1-C Transfer Path NRDC* IE is included in UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account.

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

-------------------------------------------Next change-------------------------------------------

### 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 or sidelink 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

The UE CONTEXT MODIFICATION REQUEST message is initiated by the gNB-CU.

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

If the *Estimated Arrival Probability* IE is contained in the *Conditional Inter-DU Mobility Information* IE included in the UE CONTEXT MODIFICATION REQUEST message, then the gNB-DU may use the information to allocate necessary resources for the UE.

If the gNB-DU is an IAB-DU, and if the *Conditional* *RRC Message Delivery Indication* IE is included in the UE CONTEXT MODIFICATION REQUEST message together with the *RRC-Container* IE, and if its value is set to “true”, and if the *RRC-Container* IE is for a child IAB-MT of the gNB-DU, the gNB-DU shall, if supported, withhold the RRC message until the following conditions are met:

* If the gNB-DU belongs to a migrating IAB-node, that the random-access procedure of the collocated IAB-MT has succeeded, and the IAB-node has one or more routing entries for the target path.
* If the gNB-DU belongs to a descendant node of the migrating IAB-node, that the collocated IAB-MT has received an *RRCReconfiguration* message including the intra-donor migration configurations, e.g. new TNL address(es) and the new default UL mapping.

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

-------------------------------------------Next change-------------------------------------------

#### 9.2.1.15 GNB-DU STATUS INDICATION

This message is sent by the gNB-DU to indicate to the gNB-CU its status of overload.

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 | ignore |
| Transaction ID | M |  | 9.3.1.23 |  | YES | reject |
| gNB-DU Overload Information | M |  | ENUMERATED (overloaded, not-overloaded) |  | YES | reject |
| IAB Congestion Indication | O |  | 9.3.1.x1 |  | YES | ignore |

-------------------------------------------Next change-------------------------------------------

8.10 IAB Procedures

8.10.1 BAP Mapping Configuration

8.10.1.1 General

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

NOTE: Implementation shall ensure the avoidance of potential race conditions, i.e. it shall ensure that conflicting traffic mapping configurations are not concurrently performed using the non-UE-associated BAP Mapping Configuration procedure and the UE-associated UE Context Management procedures.

8.10.1.2 Successful Operation

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**Figure 8.10.1.2-1: BAP Mapping Configuration procedure: Successful Operation**

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

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

If the *Traffic Mapping Information* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, process the *Traffic Mapping Information* IE as follows:

- if the *IP to layer2 Traffic Mapping Info* IE is included, the gNB-DU shall store the mapping information contained in the *IP to layer2 Mapping Info To Add* IE, if present, and remove the previously stored mapping information as indicated by the *IP to layer2 Mapping Info To Remove* IE, if present. The gNB-DU shall use the mapping information stored for the mapping of IP traffic to layer 2, as specified in TS 38.340 [30].

- if the *BAP layer BH RLC channel Mapping Info* IE is included, the gNB-DU shall store the mapping information contained in the *BAP layer BH RLC channel Mapping Info To Add* IE, if present, and remove the previously stored mapping information as indicated by the *BAP layer BH RLC channel Mapping Info To Remove* IE, if present. The gNB-DU shall use the mapping information stored when forwarding traffic on BAP-layer, as specified in TS 38.340 [30].

If the *Buffer Size Threshold* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, use it to trigger DL local re-routing based on the flow control feedback from child IAB-nodes.

If the *BAP Header Rewriting List* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, use it as specified in TS 38.340 [30].

If the *Re-routing Disable Indicator* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, disable the inter-donor-DU re-routing as specified in TS 38.340 [30].

### 8.10.2 gNB-DU Resource Configuration

#### 8.10.2.1 General

The gNB-DU Resource Configuration procedure is initiated by the gNB-CU in order to configure the resource usage for a gNB-DU. The procedure uses non-UE associated signalling.

In this version of the specification, this procedure is used to configure IAB resources.

#### 8.10.2.2 Successful Operation



Figure 8.10.2.2-1: gNB-DU Resource Configuration procedure: Successful Operation

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

For each cell in the *Activated Cells to Be Updated List* IE of the GNB-DU RESOURCE CONFIGURATION message, the gNB-DU shall store the resource configuration contained in the *IAB-DU Cell Resource Configuration-Mode-Info* IE and use it when performing scheduling in compliance with TS 38.213 [31].

If the *Child-Node List* IE is included in the GNB-DU RESOURCE CONFIGURATION message, for each child-node indicated by the *gNB-CU UE F1AP ID* IE and *gNB-DU UE F1AP ID* IE, and for each cell served by this child node indicated by the *NR CGI* IE in the *Child-Node Cells List* IE, the gNB-DU shall store the received information and use this information for scheduling, in compliance with TS 38.213 [31], clause 14.

If the *Neighbour-Node Cells List* IE is included in the GNB-DU RESOURCE CONFIGURATION message, for each neighbour-node cell indicated by the *NR CGI* IE in the *Neighbour-Node Cells List* IE, for each parent-node cell serving an IAB-node indicated by the *gNB-CU UE F1AP ID* IE and the *gNB-DU UE F1AP ID* IE, the gNB-DU shall store the received information and use this information for cross-link interference management and/or semi-static resource coordination.

If the *Serving Cells List* IE is included in the GNB-DU RESOURCE CONFIGURATION message, the gNB-DU shall store the received information and use this information for scheduling, in compliance with TS 38.213 [31], clause 14.

#### 8.10.2.B Unsuccessful Operation



Figure 8.10.2.3-1: gNB-DU Resource Configuration procedure: Unsuccessful Operation

If the gNB-DU cannot accept the configuration, it shall respond with a GNB-DU RESOURCE CONFIGURATION FAILURE and appropriate cause value.

If the GNB-DU RESOURCE CONFIGURATION FAILURE message includes the Time To Wait IE, the gNB-CU shall wait at least for the indicated time before reinitiating the GNB-DU RESOURCE CONFIGURATION message towards the same gNB-DU.

#### 8.10.2.3 Abnormal Conditions

Not applicable.

### 8.10.3 IAB TNL Address Allocation

#### 8.10.3.1 General

The purpose of the IAB TNL Address Allocation procedure is to allocate TNL addresses to be used by the IAB-node(s).

NOTE: This procedure is applicable for IAB-donor-DU, where the term "gNB-DU" applies to IAB-donor-DU, and the term "gNB-CU" applies to IAB-donor-CU.

#### 8.10.3.2 Successful Operation



Figure 8.10.3.2-1: IAB TNL Address Allocation procedure: Successful Operation

The gNB-CU initiates the procedure by sending the IAB TNL ADDRESS REQUEST message to the gNB-DU.

If the IAB TNL ADDRESS REQUEST message contains the *IAB IPv4 Addresses Requested* IE, the gNB-DU shall allocate the individual TNL address(es) accordingly and include these IPv4 address(es) in the IAB TNL ADDRESS RESPONSE message.

If the IAB TNL ADDRESS REQUEST message contains the *IAB IPv6 Request Type* IE, the gNB-DU shall allocate the individual IPv6 address(es) or IPv6 address prefix(es) accordingly and include these IPv6 address(es) or IPv6 address prefix(es) in the IAB TNL ADDRESS RESPONSE message.

If the IAB TNL ADDRESS REQUEST message contains the *IAB TNL Addresses to Remove List* IE, the gNB-DU shall consider that the TNL address(es) and/or TNL address prefix(es) therein are no longer used by the IAB-node(s).

If the IAB TNL ADDRESS RESPONSE message contains the *IAB TNL Address Usage IE* in the *IAB Allocated TNL Address List Item* IE, the gNB-CU shall consider the indicated TNL address usage when allocating a TNL addressto an IAB-node. Otherwise, the gNB-CU shall consider that the TNL address can be used for all traffic when allocating the TNL address to an IAB-node.

If the *IAB TNL Address Exception* IE is included in the IAB TNL ADDRESS REQUEST message, the gNB-DU shall, if supported, consider the IP address(es) therein as exempt from IP address filtering and forward the packets with the address indicated by this IE as specified in TS 38.401 [4].

#### 8.10.3.C Unsuccessful Operation



Figure 8.10.3.3-1: IAB TNL Address Allocation procedure: Unsuccessful Operation

If the gNB-DU cannot accept the request, it shall respond with an IAB TNL ADDRESS FAILURE and appropriate cause value.

If the IAB TNL ADDRESS FAILURE message includes the Time To Wait IE, the gNB-CU shall wait at least for the indicated time before reinitiating the IAB TNL ADDRESS REQUEST message towards the same gNB-DU.

#### 8.10.3.3 Abnormal Conditions

Not applicable.

-------------------------------------------Next change-------------------------------------------

### 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 |
| **>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<** | | | | | | |
| F1-C Transfer Path | O |  | 9.3.1.207 |  | YES | reject |
| F1-C Transfer Path NRDC | O |  | 9.3.1.x2 |  | YES | reject |

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#### 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 |
| **>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<** | | | | | | |
| SCG Indicator | O |  | ENUMERATED(released,...) | This IE is used at the MN in NR-DC and NE-DC and it indicates the release of an SCG | YES | ignore |
| IAB Conditional RRC Message Delivery Indication | O |  | ENUMERATED(true, …) | Indicates whether the RRC message within should be withheld. This IE is only applicable for IAB. | YES | ignore |
| F1-C Transfer Path NRDC | O |  | 9.3.1.x2 | This IE is only applicable for IAB. | YES | reject |

-------------------------------------------Next change-------------------------------------------

9.2.9 IAB messages

9.2.9.1 BAP MAPPING CONFIGURATION

This message is sent by the gNB-CU to provide the backhaul routing information and/or traffic 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 |  | 9.3.1.110 |  | - |  |
| >>Next-Hop BAP Address | M |  | 9.3.1.111 | Indicates the BAP address of the next hop IAB-node or IAB-donor-DU. | - |  |
| >>Non-F1-Terminating Topology Indicator | O |  | ENUMERATED(true, ...) | If present, indicates that the routing entry applies to the non-F1-terminating topology. | - |  |
| **BH Routing Information Removed List** |  | *0...1* |  |  | YES | ignore |
| **>BH Routing Information Removed List Item** |  | *1.. <maxnoofRoutingEntries>* |  |  | EACH | ignore |
| >>BAP Routing ID | M |  | 9.3.1.110 |  | - |  |
| Traffic Mapping Information | O |  | 9.3.1.95 |  | YES | ignore |
| Buffer Size Threshold | O |  | INTEGER (0..224-1) | The buffer size threshold (in bytes) for DL local rerouting, triggered by hop-by-hop flow control feedback. | YES | ignore |
| **BAP Header Rewriting List** |  | *0...1* |  |  | YES | ignore |
| **>BAP Header Rewriting List Item** |  | *1.. <maxnoofRoutingEntries>* |  |  | EACH | ignore |
| >>Ingress BAP Routing ID | M |  | 9.3.1.110 |  | - |  |
| >>Egress BAP Routing ID | M |  | 9.3.1.110 |  | - |  |
| >>Non-F1-terminating Topology Indicator | O |  | ENUMERATED (true, …) | If present, indicates that the egress BAP Routing ID in the present BAP header rewriting entry pertains to the non-F1-terminating topology. | - |  |
| Re-Routing Disable Indicator | O |  | ENUMERATED (true, …) | If present, indicates that the inter-donor-DU rerouting is disabled. | YES | ignore |

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

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#### 9.2.9.3 GNB-DU RESOURCE CONFIGURATION

This message is sent by the gNB-CU to provide the resource configuration for an 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 |
| **Activated Cells to Be Updated List** |  | *0..1* |  | List of activated cells served by the IAB-DU or the IAB-donor-DU whose resource configuration is updated | YES | reject |
| **>Activated Cells To Be Updated List Item** |  | *1 .. <maxnoofServedCellsIAB>* |  |  | EACH | reject |
| >> NR CGI | M |  | 9.3.1.12 |  | - |  |
| >>CHOICE *IAB-DU Cell Resource Configuration-Mode-Info* | M |  |  |  | - |  |
| >>>TDD |  |  |  |  |  |  |
| **>>>>TDD Info** |  | *1* |  |  |  |  |
| >>>>>gNB-DU Cell Resource Configuration-TDD | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains TDD resource configuration of the gNB-DU’s cell. | - |  |
| >>>FDD |  |  |  |  |  |  |
| **>>>>FDD Info** |  | *1* |  |  | - |  |
| >>>>>gNB-DU Cell Resource Configuration-FDD-UL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD UL resource configuration of the gNB-DU’s cell. | - |  |
| >>>>>gNB-DU Cell Resource Configuration-FDD-DL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD DL resource configuration of the gNB-DU’s cell. | - |  |
| **Child-Nodes List** |  | *0..1* |  | List of child IAB-nodes served by the IAB-DU or IAB-donor-DU. | YES | reject |
| **>Child-Nodes List Item** |  | *1 .. <maxnoofChildIABNodes>* |  |  | EACH | reject |
| >>gNB-CU UE F1AP ID | M |  | 9.3.1.4 | Identifier of a descendant node IAB-MT at the IAB-donor-CU. | YES | reject |
| >>gNB-DU UE F1AP ID | M |  | 9.3.1.5 | Identifier of a child-node IAB-MT at an IAB-DU or IAB-donor-DU. | YES | reject |
| **>>Child-Node Cells List** |  | *0..1* |  | List of cells served by the child-node IAB-DU whose resource configuration is updated. | YES | reject |
| **>>>Child-Node Cells List Item** |  | *1 .. <maxnoofServedCellsIAB >* |  |  | EACH | reject |
| >>>>NR CGI | M |  | 9.3.1.12 |  | - |  |
| >>>>CHOICE *IAB-DU Cell Resource Configuration-Mode-Info* | O |  |  |  | - |  |
| >>>>>*TDD* |  |  |  |  | - |  |
| **>>>>>>TDD Info** |  | *1* |  |  | - |  |
| >>>>>>>gNB-DU Cell Resource Configuration-TDD | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains TDD resource configuration of gNB-DU’s cell. | - |  |
| >>>>>>>NR FreqInfo | O |  | NR Frequency Info  9.3.1.17 |  | - |  |
| >>>>>>>Transmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  | - |  |
| >>>>>>>NR Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the Transmission Bandwidth IE shall be ignored. | - |  |
| >>>>>*FDD* |  |  |  |  | - |  |
| **>>>>>>FDD Info** |  | *1* |  |  | - |  |
| >>>>>>>gNB-DU Cell Resource Configuration-FDD-UL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD UL resource configuration of gNB-DU’s cell. | - |  |
| >>>>>>> gNB-DU Cell Resource Configuration-FDD-DL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD DL resource configuration of gNB-DU’s cell. | - |  |
| >>>>>>>UL Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  | - |  |
| >>>>>>>UL Transmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  | - |  |
| >>>>>>>UL NR Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the UL Transmission Bandwidth IE shall be ignored. | - |  |
| >>>>>>>DL Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  | - |  |
| >>>>>>>DL Transmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  | - |  |
| >>>>>>>DL NR Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the DL Transmission Bandwidth IE shall be ignored. | - |  |
| >>>>IAB STC Info | O |  | 9.3.1.109 | STC configuration of child-node IAB-DU’s cell. |  |  |
| >>>>RACH Config Common | O |  | OCTET STRING | Corresponds to the *rach-ConfigCommon* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>>>RACH Config Common IAB | O |  | OCTET STRING | Corresponds to the IAB-specific *rach-ConfigCommonIAB-r16* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>>>CSI-RS Configuration | O |  | OCTET STRING | Corresponds to the *NZP-CSI-RS-Resource* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>>>SR Configuration | O |  | OCTET STRING | Corresponds to the *SchedulingRequestResourceConfig* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>>>PDCCH Configuration SIB1 | O |  | OCTET STRING | Corresponds to the *PDCCH-ConfigSIB1* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>>>SCS Common | O |  | OCTET STRING | Corresponds to the *subCarrierSpacingCommon* as defined in subclause 6.2.2 of TS 38.331 [8]. |  |  |
| >>>>Multiplexing Info | O |  | 9.3.1.108 | Contains information on multiplexing with cells configured for collocated IAB-MT. |  |  |
| **Neighbour-Node Cells List** |  | *0..1* | List of neighbor node cells |  | YES | reject |
| **>Neighbour-Node Cells List Item** |  | *1 .. <* *maxnoofNeighbourNodeCellsIAB>* |  |  | EACH | reject |
| >>NR CGI | M |  | 9.3.1.12 |  | - |  |
| >>gNB-CU UE F1AP ID | O |  | 9.3.1.4 | Identifier of a child-node IAB-MT at an IAB-donor-CU. | - |  |
| >>gNB-DU UE F1AP ID | O |  | 9.3.1.5 | Identifier of a child-node IAB-MT at an IAB-DU or IAB-donor-DU. | - |  |
| >>Peer Parent-Node Indicator | O |  | ENUMERATED (true, …) | Indicates if the cell is served by abelongs to the peer parent IAB-node. | - |  |
| >>CHOICE *IAB-DU Cell Resource Configuration-Mode-Info* | O |  |  |  |  |  |
| >>>*TDD* |  |  |  |  |  |  |
| >>>>**TDD Info** |  | *1* |  |  |  |  |
| >>>>>gNB-DU Cell Resource Configuration-TDD | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains TDD resource configuration of neighbor gNB-DU’s cell or peer parent IAB-node’s cell. |  |  |
| >>>>>NR Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  |  |  |
| >>>>>Transmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  |  |  |
| >>>>>Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the Transmission Bandwidth IE shall be ignored. |  |  |
| **>>>>FDD Info** |  | *1* |  |  |  |  |
| >>>>>gNB-DU Cell Resource Configuration-FDD-UL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD UL resource configuration of neighbor gNB-DU’s cell or peer parent-node’s cell. |  |  |
| >>>>> gNB-DU Cell Resource Configuration-FDD-DL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD DL resource configuration of neighbor gNB-DU’s cell or peer parent-node’s cell. |  |  |
| >>>>>UL Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  |  |  |
| >>>>>ULTransmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  |  |  |
| >>>>>UL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *UL Transmission Bandwidth* IE shall be ignored. |  |  |
| >>>>>DL Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  |  |  |
| >>>>>DL Transmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  |  |  |
| >>>>>DL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *UL Transmission Bandwidth* IE shall be ignored. |  |  |
| >>IAB STC Info | O |  | 9.3.1.109 | STC configuration of peer parent-node IAB-DU’s cell. |  |  |
| >>RACH Config Common | O |  | OCTET STRING | Common RACH Configuration of peer parent node IAB-DU’s cell. Corresponds to the *rach-ConfigCommon* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>RACH Config Common IAB | O |  | OCTET STRING | IAB specific common RACH Configuration of peer parent node IAB-DU’s cell. Corresponds to the IAB-specific *rach-ConfigCommonIAB-r16* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>CSI-RS Configuration | O |  | OCTET STRING | CSI-RS configuration of peer parent node IAB-DU’s cell.  Corresponds to the *NZP-CSI-RS-Resource* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>SR Configuration | O |  | OCTET STRING | SR configuration of peer parent node IAB-DU’s cell.  Corresponds to the *SchedulingRequestResourceConfig* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>PDCCH Configuration SIB1 | O |  | OCTET STRING | PDCCH configuration SIB1 of peer parent node IAB-DU’s cell. Corresponds to the *PDCCH-ConfigSIB1* as defined in subclause 6.3.2 of TS 38.331 [8]. |  |  |
| >>SCS Common | O |  | OCTET STRING | SCS Common of peer parent node IAB-DU’s cell. Corresponds to the *subCarrierSpacingCommon* as defined in subclause 6.2.2 of TS 38.331 [8]. |  |  |
| **Serving Cells List** |  | *0..1* | List of serving cells of the collocated IAB-MT. |  | YES | reject |
| **>Serving Cells List Item** |  | 1 .. < maxnoofServingCells > |  |  | EACH | reject |
| >>NR CGI | M |  | 9.3.1.12 |  | - |  |
| >>CHOICE *IAB-MT Cell NA Resource Configuration-Mode-Info* | O |  |  |  |  |  |
| >>>*TDD* |  |  |  |  |  |  |
| >>>>**TDD Info** |  | *1* |  |  |  |  |
| >>>>>gNB-DU Cell NA Resource Configuration-TDD | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains TDD NA resource configuration of parent IAB-node’s cell for the collocated IAB-MT. |  |  |
| >>>>>NR Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  |  |  |
| >>>>>Transmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  |  |  |
| >>>>>Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *Transmission Bandwidth* IE shall be ignored. |  |  |
| **>>>>FDD Info** |  | *1* |  |  |  |  |
| >>>>>gNB-DU Cell NA Resource Configuration-FDD-UL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD UL NA resource configuration of parent IAB-node’s cell for the collocated IAB-MT. |  |  |
| >>>>>gNB-DU Cell NA Resource Configuration-FDD-DL | M |  | gNB-DU Cell Resource Configuration  9.3.1.107 | Contains FDD DL NA resource configuration of parent IAB-node’s cell for the collocated IAB-MT. |  |  |
| >>>>>UL Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  |  |  |
| >>>>>ULTransmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  |  |  |
| >>>>>UL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *UL Transmission Bandwidth* IE shall be ignored. |  |  |
| >>>>>DL Frequency Info | O |  | NR Frequency Info  9.3.1.17 |  |  |  |
| >>>>>DLTransmission Bandwidth | O |  | Transmission Bandwidth  9.3.1.15 |  |  |  |
| >>>>>DL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *UL Transmission Bandwidth* IE shall be ignored. |  |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofChildIABNodes | Maximum number of child nodes served by an IAB-DU or IAB-donor-DU. Value is 1024. |
| maxnoofServedCellsIAB | Maximum number of cells served by an IAB-DU or IAB-donor-DU. Value is 512. |
| maxnoofNeighbourNodeCellsIAB | Maximum no. of neighbour cells. Value is 1024. |

-------------------------------------------Next change-------------------------------------------

#### 9.2.9.5 IAB TNL ADDRESS REQUEST

This message is sent by the gNB-CU to request the allocation of IP addresses for IAB-node(s).

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 |
| IAB IPv4 Addresses Requested | O |  | IAB TNL Addresses Requested  9.3.1.101 |  | YES | reject |
| CHOICE *IAB IPv6 Request Type* | O |  |  |  | YES | reject |
| >*IPv6 Address* |  |  |  |  | - |  |
| >>IAB IPv6 Addresses Requested | M |  | IAB TNL Addresses Requested  9.3.1.101 |  | - |  |
| >*IPv6 Prefix* |  |  |  |  | - |  |
| >>IAB IPv6 Address Prefixes Requested | M |  | IAB TNL Addresses Requested  9.3.1.101 |  | - |  |
| **IAB TNL Addresses To Remove List** |  | *0..1* |  |  | YES | reject |
| **>IAB TNL Addresses To Remove Item** |  | *1*..<*maxnoofTLAsIAB*> |  |  | EACH | reject |
| >>IAB TNL Address | M |  | 9.3.1.102 |  | - |  |
| IAB TNL Address Exception | O |  | 9.3.1.x3 |  | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTLAsIAB | Maximum no. of individual IPv4/IPv6 addresses or IPv6 address prefixes that can be allocated in one procedure execution. The value is 1024. |

-------------------------------------------Next change-------------------------------------------

9.3.1Radio Network Layer Related IEs

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

#### 9.3.1.89 Intended TDD DL-UL Configuration

This IE contains the subcarrier spacing, cyclic prefix and TDD DL-UL slot configuration of an NR cell that the receiving NG-RAN node needs to take into account for cross-link interference mitigation, and/or for NR-DC power coordination, when operating its own cells.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| NR SCS | M |  | ENUMERATED (scs15, scs30, scs60, scs120, …) | The values scs15, scs30, scs60 and scs120 corresponds to the sub carrier spacing in TS 38.104 [17]. |
| NR Cyclic Prefix | M |  | ENUMERATED (Normal, Extended, …) | The type of cyclic prefix, which determines the number of symbols in a slot. |
| NR DL-UL Transmission Periodicity | M |  | ENUMERATED (ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms3, ms4, ms5, ms10, ms20, ms40, ms60, ms80, ms100, ms120, ms140, ms160, …) | The periodicity is expressed in the format msXpYZ, and equals X.YZ milliseconds. |
| **Slot Configuration List** |  | 1 |  |  |
| **>Slot Configuration List Item** |  | *1..<maxnoofslots>* |  |  |
| >>Slot Index | M |  | INTEGER (0..5119) |  |
| >>CHOICE *Symbol Allocation in Slot* | M |  |  |  |
| >>>*All DL* |  |  | NULL | This choice implies that all symbols in the slot are DL symbols. |
| >>>*All UL* |  |  | NULL | This choice implies that all symbols in the slot are UL symbols. |
| >>>*Both DL and UL* |  |  |  |  |
| >>>>Number of DL Symbols | M |  | INTEGER (0..13) | Number of consecutive DL symbols in the slot identified by Slot Index. If extended cyclic prefix is used, the maximum value is 11. The *Permutation* IE indicates the location of DL symbols in the slot. |
| >>>>Number of UL Symbols | M |  | INTEGER (0..13) | Number of consecutive UL symbols in the slot identified by Slot Index. If extended cyclic prefix is used, the maximum value is 11. The *Permutation* IE indicates the location of UL symbols in the slot. |
| >>>>Permutation | O |  | ENUMERATED (DFU, UFD, …) | If not present, the default value is DFU. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofslots | Maximum length of number of slots in a 160-ms period. Value is 5120. |

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

#### 9.3.1.98 BAP layer BH RLC channel mapping Information List

This IE includes the information used by the IAB-DU to perform the BH RLC channel mapping when forwarding traffic on BAP sublayer.

When this IE is included in the UE-associated F1AP signalling for setting up or modifying a BH RLC channel, it contains either the *Prior-Hop BAP Address* IE and the *Ingress BH RLC CH ID* IE to configure a mapping in downlink direction, or the *Next-Hop BAP address* IE and the *Egress BH RLC CH ID* IE to configure a mapping in uplink direction. This IE indicates the BH RLC channel served by the collocated IAB-MT.

When this IE is included in the non-UE-associated F1AP signalling, it shall contain the *Prior-Hop BAP Address* IE, the *Ingress BH RLC CH ID* IE, the *Next-Hop BAP address* IE and the *Egress BH RLC CH ID* IE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **BAP layer BH RLC channel mapping info Item** |  | 1.. <*maxnoofMappingEntries*> |  |  |
| >Mapping Information Index | M |  | 9.3.1.100 |  |
| >Prior-Hop BAP Address | O |  | 9.3.1.111 |  |
| >Ingress BH RLC CH ID | O |  | BH RLC Channel ID  9.3.1.113 |  |
| >Next-Hop BAP Address | O |  | 9.3.1.111 |  |
| >Egress BH RLC CH ID | O |  | BH RLC Channel ID  9.3.1.113 |  |
| >Ingress Non-F1-terminating Topology Indicator | O |  | ENUMERATED (true, …) | If present, indicates that the ingress topology for this entry is the non-F1-terminating topology. |
| >Egress Non-F1-terminating Topology Indicator | O |  | ENUMERATED (true, …) | If present, indicates that the egress topology for this entry is the non-F1-terminating topology. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| *maxnoofMappingEntries* | Maximum no. of mapping entries, the maximum value is 67108864 (i.e. 2^26). |

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

#### 9.3.1.107 gNB-DU Cell Resource Configuration

This IE contains the resource configuration of the cells served by a gNB-DU, i.e. the TDD/FDD resource parameters for each activated cell (TS 38.213 [31], clause 11.1.1).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Subcarrier Spacing | M |  | ENUMERATED (kHz15, kHz30, kHz60, kHz120, kHz240, spare3, spare2, spare1, …) | Subcarrier spacing used as reference for the TDD/FDD slot configuration. | YES | reject |
| DUF Transmission Periodicity | O |  | ENUMERATED (ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, …) |  | YES | reject |
| **DUF Slot Configuration List** |  | *0..1* |  |  |  |  |
| >**DUF Slot Configuration Item** |  | *1*..<*maxnoofDUFSlots*> |  | The *maxNrofSlots* in TS 38.331 [8]. | - |  |
| >>CHOICE *DUF Slot Configuration* | M |  |  |  | - |  |
| >>>Explicit Format |  |  |  |  | - |  |
| >>>>Permutation | M |  | ENUMERATED (DFU, UFD, …) |  | - |  |
| >>>>Number of Downlink Symbols | O |  | INTEGER (0..14) |  | - |  |
| >>>>Number of Uplink Symbols | O |  | INTEGER (0..14) |  | - |  |
| >>>Implicit Format |  |  |  |  |  |  |
| >>>>DUF Slot Format Index | M |  | INTEGER (0..254) | Index into Table 11.1.1-1 and Table 14-2 in TS 38.213 [31], excluding the last row in Table 14-2. | - |  |
| HSNA Transmission Periodicity | M |  | ENUMERATED (ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ms20, ms40, ms80, ms160, …) |  | YES | reject |
| **HSNA Slot Configuration List** |  | 0..1 |  |  |  |  |
| >**HSNA Slot Configuration Item** |  | 1..<*maxnoofHSNASlots*> |  |  |  |  |
| >>HSNA Downlink | O |  | ENUMERATED (HARD, SOFT, NOTAVAILABLE) | HSNA value for downlink symbols in a slot. | - |  |
| >>HSNA Uplink | O |  | ENUMERATED (HARD, SOFT, NOTAVAILABLE) | HSNA value for uplink symbols in a slot. | - |  |
| >>HSNA Flexible | O |  | ENUMERATED (HARD, SOFT, NOTAVAILABLE) | HSNA value for flexible symbols in a slot. | - |  |
| RB Set Configuration | O |  | 9.3.1.x4 |  |  |  |
| **Frequency-Domain HSNA Configuration List** |  | 0..1 |  |  |  |  |
| **>Frequency-Domain HSNA Configuration Item** |  | 1..<*maxnoofRBsetsPerCell*> |  |  |  |  |
| >>RB set Index | M |  | INTEGER (0.. *maxnoofRBsetsPerCell-1*) | Refers to an RB set defined by RB Set Configuration. |  |  |
| **>>Frequency-Domain HSNA Slot Configuration List** |  | 1 |  |  |  |  |
| **>>>Frequency-Domain HSNA Slot Configuration Item** |  | 1..<*maxnoofHSNASlots*> |  |  |  |  |
| >>>>Slot Index | O |  | INTEGER (0..5119) | Indicates an index to a slot within the HSNA Transmission Periodicity. |  |  |
| >>>>HSNA Downlink | O |  | ENUMERATED (HARD, SOFT, NOTAVAILABLE) | HSNA value for downlink symbols in a slot, for an RB set. |  |  |
| >>>>HSNA Uplink | O |  | ENUMERATED (HARD, SOFT, NOTAVAILABLE) | HSNA value for uplink symbols in a slot, for an RB set. |  |  |
| >>>>HSNA Flexible | O |  | ENUMERATED (HARD, SOFT, NOTAVAILABLE) | HSNA value for flexible symbols in a slot, for an RB set. |  |  |
| **Child IAB-Nodes NA Resource List** |  | *0..1* |  | List of child IAB-nodes served by the IAB-DU or IAB-donor-DU. | YES |  |
| **>Child IAB--Nodes NA Resource List Item** |  | *1 .. <maxnoofChildIABNodes>* |  |  | EACH |  |
| >>gNB-CU UE F1AP ID | O |  | 9.3.1.4 | Identifier of a child-node IAB-MT at the IAB-donor-CU. | - |  |
| >>gNB-DU UE F1AP ID | O |  | 9.3.1.5 | Identifier of a child-node IAB-MT at an IAB-DU or IAB-donor-DU. | - |  |
| **>>NA Resource Configuration List** |  | 0..1 |  | List of not-available resources of this cell for this child IAB-node |  |  |
| **>>>NA Resource Configuration Item** |  | 1..<*maxnoofHSNASlots*> |  |  |  |  |
| >>>>NA Downlink | O |  | ENUMERATED (true, false, …) | Indicates whether downlink symbols, in a slot, are available to serve the child IAB--node. |  |  |
| >>>>NA Uplink | O |  | ENUMERATED (true, false, …) | Indicates whether uplink symbols, in a slot, are available to serve the child IAB--node. |  |  |
| >>>>NA Flexible | O |  | ENUMERATED (true, false, …) | Indicates whether flexible symbols, in a slot, are available to serve the child IAB--node. |  |  |
| **Parent IAB Nodes NA Resource Configuration List** |  | 0..1 |  | List of unavailable resources of this cell for this IAB-node. |  |  |
| **>Parent IAB Nodes NA Resource Configuration Item** |  | 1..<*maxnoofHSNASlots*> |  |  |  |  |
| >>NA Downlink | O |  | ENUMERATED (true, false, …) | Indicates whether downlink symbols, in a slot, are unavailable to serve the IAB-node. |  |  |
| >>NA Uplink | O |  | ENUMERATED (true, false, …) | Indicates whether uplink symbols, in a slot, are unavailable to serve the IAB-node. |  |  |
| >>NA Flexible | O |  | ENUMERATED (true, false, …) | Indicates whether flexible symbols, in a slot, are unavailable to serve the IAB-node. |  |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDUFSlots | Maximum no. of slots in 10ms. Value is 320. |
| maxnoofSymbols | Maximum no. of symbols in a slot. Value is 14. |
| maxnoofHSNASlots | Maximum no of "Hard", "Soft" or "Not available" slots in 160ms. Value is 5120. |
| maxnoofRBsetsPerCell | Maximum no. of RB sets per IAB-DU cell. Value is 8 |
| maxnoofChildIABNodes | Maximum number of child nodes served by an IAB-DU or an IAB-donor-DU. Value is 1024. |

#### 9.3.1.108 Multiplexing Info

This IE contains information about the multiplexing capabilities between the gNB-DU’s cell and the cells configured on the collocated IAB-MT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **IAB-MT Cell List** |  | *1* |  |  |
| **>IAB-MT Cell Item** |  | *1* .. <*maxnoofServingCells*> |  |  |
| >>NR Cell Identity | M |  | BIT STRING (SIZE(36)) | Cell identity of a serving cell configured for a collocated IAB-MT. |
| >>DU\_RX/MT\_RX | M |  | ENUMERATED (supported, not supported, supported and FDM required) | An indication of whether the IAB-node supports simultaneous reception at its DU and MT side. |
| >>DU\_TX/MT\_TX | M |  | ENUMERATED (supported, not supported, supported and FDM required) | An indication of whether the IAB-node supports simultaneous transmission at its DU and MT side. |
| >>DU\_TX/MT\_RX | M |  | ENUMERATED (supported, not supported, supported and FDM required) | An indication of whether the IAB-node supports simultaneous transmission at its DU and reception at its MT side. |
| >>DU\_RX/MT\_TX | M |  | ENUMERATED (supported, not supported, supported and FDM required) | An indication of whether the IAB-node supports simultaneous reception at its DU and transmission at its MT side. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofServingCells | Maximum no. of serving cells for IAB-MT. Value is 32, as defined by the *maxNrofServingCells* in TS 38.331 [8]. |

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

#### 9.3.1.114 BH Information

This IE includes the backhaul information for UL or DL.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| BAP Routing ID | O |  | 9.3.1.110 | This IE is not needed for the BAP control PDU.  For UL F1-U traffic, the BAP address included in this IE also indicates the IAB-donor-DU via which the DL traffic is transmitted. |
| **Egress BH RLC CH List** |  | *0..1* |  |  |
| **>Egress BH RLC CH List Item** |  | *1..*  *<maxnoofEgressLinks>* |  |  |
| >>Next-Hop BAP Address | M |  | 9.3.1.111 | This IE identifies the next-hop node on the backhaul path to receive the packet. The value of this IE should be unique in the whole list. |
| >>Egress BH RLC CH ID | M |  | BH RLC Channel ID  9.3.1.113 | This IE identifies the BH RLC channel in the link between the IAB node/IAB-donor-DU and the node identified by the *Next-Hop BAP Address* IE. |
| Non-F1-Terminating Topology Indicator | O |  | ENUMERATED (true, …) | If present, indicates that the Next-Hop BAP Address and Egress BH RLC CH ID contained in this IE pertain to the non-F1-terminating topology. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofEgressLinks | Maximum no. of egress links. Value is 2. |

-------------------------------------------Next change-------------------------------------------

#### 9.3.1.x1 IAB Congestion Indication

This IE contains the IAB downlink congestion indication.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **IAB Congestion Indication List** |  | *1* |  |  |
| **>IAB Congestion Indication List Item** |  | *1..*  *<maxnoofIABCongInd>* |  |  |
| >>Child Node Identifier | M |  | 9.3.1.111 | This IE identifies the child node, the link to which is congested. |
| **>>BH RLC CH List** |  | *0..1* |  |  |
| **>>>BH RLC CH List Item** |  | *1..*  *<maxnoofBHRLCChannels>* |  |  |
| >>>>BH RLC CH  ID | M |  | 9.3.1.113 | This IE identifies the congested BH RLC channel over the link towards the node identified by the *Child Node Identifier* IE. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofIABCongInd | Maximum no. of congestion indications, the maximum value is 1024. |
| maxnoofBHRLCChannels | Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536. |

-------------------------------------------Next change-------------------------------------------

#### 9.3.1.x2 F1-C Transfer Path NRDC

This IE indicates the transmission path of the F1-C traffic in NR-DC. This IE is only applicable for IAB.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| F1-C Path NRDC | M |  | ENUMERATED (mcg, scg, both) | This IE indicates the transmission path of the F1-C traffic in NR-DC. |

-------------------------------------------Next change-------------------------------------------

#### 9.3.1.x3 IAB TNL Address Exception

This IE indicates the list of TNL addresses, pertaining to the packets to be forwarded via the tunnel by the IAB-donor-DU.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **IAB TNL Address List** |  | *1* |  |  |
| **>IAB IAB TNL Address Item** |  | *1..*  *<maxnoofTLAsIAB>* |  |  |
| >>IAB TNL Address | M |  | 9.3.1.102 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTLAsIAB | Maximum no. of individual IPv4/IPv6 addresses or IPv6 address prefixes in one procedure execution. The value is 1024. |

#### 9.3.1.x4 RB Set Configuration

This IE contains the RB Set Configuration. The IE is only applicable for an IAB-DU.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Subcarrier Spacing | M |  | ENUMERATED (kHz15, kHz30, kHz60, kHz120, kHz240, spare3, spare2, spare1, …) | Subcarrier spacing used as reference for the RB set configuration. |
| RB Set Size | M |  | ENUMERATED (2, 4, 8, 16, 32, 64) | Number of PRBs in each RB set. |
| **RB Set List** |  | 0..1 |  |  |
| **>RB Set Item** |  | 1..<*maxnoofRBsetsPerCell*> |  |  |
| >>RB Set Index | M |  | INTEGER (0.. *maxnoofRBsetsPerCell-1*) |  |
| >>Initial RB Index | M |  | INTEGER (0.. *maxnoofPhysicalResourceBlocks-*1) |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofRBsetsPerCell | Maximum no. of RB sets per IAB-DU or IAB-donor-DU cell. Value is 8. |
| maxnoofPhysicalResourceBlocks | Maximum no. of Physical Resource Blocks. Value is [FFS]. |

**ASN.1 TBW**

-------------------------------------------End of changes-------------------------------------------