**3GPP T****SG-RAN WG3 Meeting #127 draftR3-25xxxx**

**Athens, Greece, 17th – 21st February, 2025**

**Title:** (TP for AI/ML BLCR to TS 38.473) Discussion on the AI/ML-based Coverage and Capacity Optimization

**Source:** Huawei

**Agenda item:** 11.3

**Document Type:** Discussion and Decision

1. Introduction

This is a TP for the F1AP BLCR capturing the following agreements from RAN3#127:

|  |
| --- |
| **Each Future Coverage Modification Notification Item included in the Future Coverage Modification Notification List IE has a Future Coverage Modification Cause IE associated to it from DU to CU.****The Future Coverage Modification Cause IE follows the same design of the existing Coverage Modification Cause IE, i.e., it is an ENUMERATED type, but with codepoints “coverage” and “cell edge capacity” only.****Value ‘0’ for the Future Cell Coverage State IE is needed and has the same meaning as cell inactive in legacy CCO.** |

2. TP for AI/ML BLCR to TS 38.473 (based on R3-250043)

<<<<<<<<<<<<<<<<<<<< First Change >>>>>>>>>>>>>>>>>>>>

8.2.4 gNB-DU Configuration Update

8.2.4.1 General

The purpose of the gNB-DU Configuration Update procedure is to update application level configuration data needed for the gNB-DU and the gNB-CU to interoperate correctly on the F1 interface. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

NOTE: Update of application level configuration data also applies between the gNB-DU and the gNB-CU in case the DU does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [7]. How to use this information when this option is used is not explicitly specified.

8.2.4.2 Successful Operation

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**Figure 8.2.4.2-1: gNB-DU Configuration Update procedure: Successful Operation**

The gNB-DU initiates the procedure by sending a GNB-DU CONFIGURATION UPDATE message to the gNB-CU including an appropriate set of updated configuration data that it has just taken into operational use. The gNB-CU responds with GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message to acknowledge that it successfully updated the configuration data. If an information element is not included in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall interpret that the corresponding configuration data is not changed and shall continue to operate the F1-C interface with the existing related configuration data.

<<<<SKIP UNRELATED PART>>>>

If the *Coverage Modification Notification* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, take it into account for Coverage and Capacity Optimization and network energy saving. If the *Coverage Modification Cause* IE is set to the "network energy saving", gNB-CU may consider those deactivated SSB beams are due to network energy saving.

If the *Cells for SON* IE is present in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-DU may store or update this information and behaves as follows:

- For each served cell indicated by the *NR CGI* IE included within the *Cells for SON Item* IE, the gNB-DU may adjust the PRACH configuration of this served cell.

- If the *Neighbour NR Cells for SON List* IE is present in the *Cells for SON Item* IE, the gNB-DU may take the PRACH configuration of neighbour cells included in the *Neighbour NR Cells for SON List* IE into consideration when adjusting the PRACH configuration of the served cell.

If the *RedCap Broadcast Information* IE is contained in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may store and use this information to determine a suitable target in case of subsequent outgoing mobility involving RedCap UEs.

If the *eRedCap Broadcast Information* IE is contained in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may store and use this information to determine a suitable target in case of subsequent outgoing mobility involving eRedCap UEs.

If the *TAI NSAG Support List* IE is included in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, use this information as specified in TS 23.501 [21].

If the *gNB-DU Name* IE is included in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may store it or update this IE value if already stored, and use it as a human readable name of the gNB-DU. If the *Extended gNB-DU Name* IE is included in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may store it or update this IE value if already stored, and use it as a human readable name of the gNB-DU and shall ignore the *gNB-DU Name* IE if also included.

If the *RRC Terminating IAB-Donor Related Info* IE is included in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, consider that the BAP address indicated by the *Mobile IAB-MT BAP Address* IE is assigned by the gNB-CU of the RRC-terminating IAB-donor indicated by the *RRC Terminating IAB-Donor gNB-ID* IE, and it shall use this BAP address and gNB ID for the subsequent IAB Transport Migration Management procedure towards the RRC-terminating IAB-donor of the mobile IAB-node as needed, as specified in TS 38.423 [28].

If the GNB-DU CONFIGURATION UPDATE message contains the *Mobile IAB-MT User Location Information* IE, the gNB-CU shall, if supported, take it into account when reporting UE location information to the AMF for a UE served by the mobile IAB-node.

If the *XR Broadcast Information* IE is included in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, consider the indicated cell does not allow 2Rx XR UEs in case of subsequent outgoing mobility involving XR UEs.

If the *Barring Exemption for Emergency Call Information* IE is included in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may store the information and consider the indicated cell allows emergency bearer services for UEs who would otherwise consider the cell as barred as specified in TS 38.304 [24].

If the *Future Coverage Modification Notification* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, take it into account for proactive Coverage and Capacity Optimization.

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

8.2.5 gNB-CU Configuration Update

8.2.5.1 General

The purpose of the gNB-CU Configuration Update procedure is to update application level configuration data needed for the gNB-DU and gNB-CU to interoperate correctly on the F1 interface. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

8.2.5.2 Successful Operation

****

**Figure 8.2.5.2-1: gNB-CU Configuration Update procedure: Successful Operation**

The gNB-CU initiates the procedure by sending a GNB-CU CONFIGURATION UPDATE message including the appropriate updated configuration data to the gNB-DU. The gNB-DU responds with a GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE message to acknowledge that it successfully updated the configuration data. If an information element is not included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall interpret that the corresponding configuration data is not changed and shall continue to operate the F1-C interface with the existing related configuration data.

<<<<SKIP UNRELATED PART>>>>

If the *CCO Assistance Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message, and the *NR CGI* IE contained in the *Affected Cells and Beams* IE is served by the gNB-DU, the gNB-DU may use it to determine a new cell and/or beam configuration.

If the *CCO Assistance Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message and the *NR CGI* IE contained in the *Affected Cells and Beams* IE is not served by the gNB-DU, the gNB-DU may use it to adjust coverage of its cells.If the *CCO issue detection* IE set to "network energy saving" is included in the *CCO Assistance Information* IE, the gNB-DU may consider the indicated SSB beams by the *Affected Cells and Beam* IE are deactivated due to network energy saving.

If the *Cells for SON* IE is present in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU may store or update this information and it behaves as follows:

- For each served cell indicated by the *NR CGI* IE included within the *Cells for SON Item* IE, the gNB-DU may adjust the PRACH configuration of this served cell.

- If the *Neighbour NR Cells for SON List* IE is present in the *Cells for SON Item* IE, the gNB-DU may take the PRACH configuration of neighbour cells included in the *Neighbour NR Cells for SON List* IE into consideration when adjusting the PRACH configuration of the served cell.

If the *gNB-CU Name* IE is included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU may store it or update this IE value if already stored, and use it as a human readable name of the gNB-CU. If the *Extended gNB-CU Name* IE is included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU may store it or update this IE value if already stored, and use it as a human readable name of the gNB-CU and shall ignore the *gNB-CU Name* IE if also included.

If the *Mobile IAB Barred* IE is included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall, if supported, consider it as an indication of whether the cell allows mobile IAB-node access.

If the *Predicted CCO Assistance Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message, and the *NR CGI* IE contained in the *Predicted Affected Cells and Beams* IE is served by the gNB-DU, the gNB-DU may use it to determine a future cell and/or beam configuration.

If the *Predicted CCO Assistance Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message and the *NR CGI* IE contained in the *Predicted* *Affected Cells and Beams* IE is not served by the gNB-DU, the gNB-DU may use it to adjust the coverage of its cells.
Editor´s note: to be further discussed whether any more details need to be added to the above paragraph.

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.2.1.7 GNB-DU CONFIGURATION UPDATE

This message is sent by the gNB-DU to transfer updated information associated to an F1-C interface instance.

NOTE: If F1-C signalling transport is shared among several F1-C interface instances, this message may transfer updated information associated to several F1-C interface instances.

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 |
| <<<<SKIP UNRELATED PART>>>> |
| Coverage Modification Notification | O |  | 9.3.1.213 |  | YES | ignore |
| gNB-DU Name | O |  | PrintableString(SIZE(1..150,...)) | Human readable name of the gNB-DU. | YES | ignore |
| Extended gNB-DU Name | O |  | 9.3.1.205 |  | YES | ignore |
| RRC Terminating IAB-Donor Related Info | O |  | 9.3.1.306 | Indicates the information related to a mobile IAB-node’s RRC-terminating IAB-donor.  | YES | reject |
| Mobile IAB-MT User Location Information | O |  | 9.3.1.307 |  | YES | ignore |
| Future Coverage Modification Notification | O |  | 9.3.1.B |  | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxCellingNBDU | Maximum no. cells that can be served by a gNB-DU. Value is 512. |
| maxnoofUEIDs | Maximum no. of UEs that can be served by a gNB-DU. Value is 65536. |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between the gNB-CU and the gNB-DU. Value is 32. |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.2.1.10 GNB-CU CONFIGURATION UPDATE

This message is sent by the gNB-CU to transfer updated information associated to an F1-C interface instance.

NOTE: If F1-C signalling transport is shared among several F1-C interface instances, this message may transfer updated information associated to several F1-C interface instances.

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 |
| <<<<SKIP UNRELATED PART>>>> |
| CCO Assistance Information | O |  | 9.3.1.211 | Indicates CCO Assistance Information for cells and beams served by the gNB-DU of the same NG-RAN node or for cells and beams not served by the gNB-DU. | YES | ignore |
| Cells for SON List | O |  | 9.3.1.214 |  | YES | ignore |
| gNB-CU Name | O |  | PrintableString(SIZE(1..150,...)) | Human readable name of the gNB-CU.  | YES | ignore |
| Extended gNB-CU Name | O |  | 9.3.1.206 |  | YES | ignore |
| **Cells Allowed to be Deactivated List** |  | *0..1* |  |  | YES | ignore |
| >**Cells Allowed to be Deactivated List Item** |  | *1 .. <maxCellingNBDU>* |  |  | EACH | ignore |
| >>NR CGI | M |  | 9.3.1.12 |  | - |  |
| Predicted CCO Assistance Information | O |  | 9.3.1.A | Indicates predicted CCO Assistance Information for cells and beams served by the gNB-DU of the same NG-RAN node or for cells and beams not served by the gNB-DU. | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxCellingNBDU | Maximum numbers of cells that can be served by a gNB-DU. Value is 512. |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between the gNB-CU and the gNB-DU. Value is 32. |
| maxCellineNB | Maximum no. cells that can be served by an eNB. Value is 256. |
| *maxnoofSSBAreas* | Maximum no. SSB Areas that can be served by a cell. Value is 64.  |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.3.1.212 Affected Cells and Beams

This IE includes a list of cells and/or SS/PBCH block indexes affected by the detected CCO issue or predicted to be affected by the predicted CCO issue.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **Affected Cell List** |  | *1 .. < maxAffectedCells>* |  |  |
| >NR CGI | M |  | 9.3.1.12 |  |
| **>Affected SSB List** |  | *0..<maxnoofSSBAreas>* |  |  |
| >>SSB Index | M |  | INTEGER (0..63) |  |

| **Range bound** | **Explanation** |
| --- | --- |
| maxAffectedCells | Maximum numbers of cells affected by a CCO issue. Value is 32. |
| maxnoofSSBAreas | Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64. |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.3.1.A Predicted CCO Assistance Information

This IE provides predicted assistance information for the future Coverage and Capacity Optimisation (CCO) actions for predicted CCO issues.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| Predicted CCO Issue  | O |  | ENUMERATED (coverage, cell edge capacity, ...) | Indicates the type of predicted CCO issue. |
| Predicted Affected Cells and Beams | O |  | 9.3.1.212 |  |
| Time for Predicted CCO Issue | O | INTEGER (1..FFS, ...) |  | Indicates the time when the predicted CCO issue will happen from the time of receiving this information, in seconds. |

9.3.1.B Future Coverage Modification Notification

This IE includes a list of cells and/or SS/PBCH block indexes with the corresponding future coverage configuration selected by a gNB-DU.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| **Future Coverage Modification Notification List** |  | *1* |  |  |
|  **>Future Coverage Modification Notification Item** |  | 1..<maxCellingNBDU> |  |  |
|  >>NR CGI | M |  | 9.3.1.12 |  |
|  >>Future Cell Coverage State | M |  | INTEGER (0..63, ...) | Value ‘0’ indicates that the cell will be inactive. Other values indicate that the cell will be active and also indicate the future coverage configuration of the concerned cell. |
|  **>>Future SSB Modification Notification List** |  | *0..1* |  |  |
|  **>>>Future SSB Modification Notification Item** |  | *1..<maxnoofSSBAreas>* |  |  |
|  >>>>SSB Index | M |  | INTEGER (0..63) |  |
|  >>>>Future SSB Coverage State | M |  | INTEGER (0..15, ...) | Value ‘0’ indicates that the SSB beam will be inactive. Other values indicate that the SSB beams will be active and also indicate the future coverage configuration of the concerned SSB beams. |
|  >>Time for Future Coverage Modification | O |  | INTEGER (1..FFS, ...) | Indicates the time when the Future Cell Coverage State(s) and/or the Future SSB Coverage State(s) will be applied by the gNB-DU relative to the time of receiving this information, in seconds. |
| >>Future Coverage Modification Cause | O |  | ENUMERATED(coverage, cell edge capacity, …) |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxCellingNBDU | Maximum no. cells that can be served by a gNB-DU. Value is 512. |
| maxnoofSSBAreas | Maximum numbers of SSB Areas that can be served by a NG-RAN node cell. Value is 64. |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.4.3 Elementary Procedure Definitions

-- ASN1START

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

--

-- PDU definitions for F1AP.

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

F1AP-PDU-Contents {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

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

IMPORTS

 AssociatedSessionID,

*\*\*\* unmodified text omitted \*\*\**

 F1U-PathFailure,

 Future-Coverage-Modification-Notification,

 Predicted-CCO-Assistance-Information

FROM F1AP-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

 ProtocolIE-ContainerPair{},

 ProtocolIE-SingleContainer{},

 F1AP-PRIVATE-IES,

 F1AP-PROTOCOL-EXTENSION,

 F1AP-PROTOCOL-IES,

 F1AP-PROTOCOL-IES-PAIR

FROM F1AP-Containers

 id-AssociatedSessionID,

*\*\*\* unmodified text omitted \*\*\**

 id-F1U-PathFailure,

 id-Future-Coverage-Modification-Notification,

 id-Predicted-CCO-Assistance-Information,

 maxCellingNBDU,

*\*\*\* unmodified text omitted \*\*\**

 maxnoofServingCellMOs

9.4.4 PDU Definitions

<<<<<<<<<<<<<<<<<<<<Skipped Unchanged part >>>>>>>>>>>>>>>>>>>>

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

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-- GNB-DU CONFIGURATION UPDATE ELEMENTARY PROCEDURE

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

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

--

-- GNB-DU CONFIGURATION UPDATE

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

GNBDUConfigurationUpdate::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {GNBDUConfigurationUpdateIEs} },

 ...

}

GNBDUConfigurationUpdateIEs F1AP-PROTOCOL-IES ::= {

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

 { ID id-Served-Cells-To-Add-List CRITICALITY reject TYPE Served-Cells-To-Add-List PRESENCE optional }|

 { ID id-Served-Cells-To-Modify-List CRITICALITY reject TYPE Served-Cells-To-Modify-List PRESENCE optional }|

 { ID id-Served-Cells-To-Delete-List CRITICALITY reject TYPE Served-Cells-To-Delete-List PRESENCE optional }|

 { ID id-Cells-Status-List CRITICALITY reject TYPE Cells-Status-List PRESENCE optional }|

 { ID id-Dedicated-SIDelivery-NeededUE-List CRITICALITY ignore TYPE Dedicated-SIDelivery-NeededUE-List PRESENCE optional }|

 { ID id-gNB-DU-ID CRITICALITY reject TYPE GNB-DU-ID PRESENCE optional }|

 { ID id-GNB-DU-TNL-Association-To-Remove-List CRITICALITY reject TYPE GNB-DU-TNL-Association-To-Remove-List PRESENCE optional }|

 { ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

 { ID id-Coverage-Modification-Notification CRITICALITY ignore TYPE Coverage-Modification-Notification PRESENCE optional }|

 { ID id-gNB-DU-Name CRITICALITY ignore TYPE GNB-DU-Name PRESENCE optional }|

 { ID id-Extended-GNB-DU-Name CRITICALITY ignore TYPE Extended-GNB-DU-Name PRESENCE optional }|

 { ID id-RRC-Terminating-IAB-Donor-Related-Info CRITICALITY reject TYPE RRC-Terminating-IAB-Donor-Related-Info PRESENCE optional }|

 { ID id-Mobile-IAB-MTUserLocationInformation CRITICALITY ignore TYPE Mobile-IAB-MTUserLocationInformation PRESENCE optional }|

 { ID id-Future-Coverage-Modification-Notification CRITICALITY ignore TYPE Future-Coverage-Modification-Notification PRESENCE optional }},

 ...

}

<<<<<<<<<<<<<<<<<<<<Skipped Unchanged part >>>>>>>>>>>>>>>>>>>>

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

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-- GNB-CU CONFIGURATION UPDATE ELEMENTARY PROCEDURE

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

--

-- GNB-CU CONFIGURATION UPDATE

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

GNBCUConfigurationUpdate ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { GNBCUConfigurationUpdateIEs} },

 ...

}

GNBCUConfigurationUpdateIEs F1AP-PROTOCOL-IES ::= {

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

 { ID id-Cells-to-be-Activated-List CRITICALITY reject TYPE Cells-to-be-Activated-List PRESENCE optional }|

 { ID id-Cells-to-be-Deactivated-List CRITICALITY reject TYPE Cells-to-be-Deactivated-List PRESENCE optional }|

 { ID id-GNB-CU-TNL-Association-To-Add-List CRITICALITY ignore TYPE GNB-CU-TNL-Association-To-Add-List PRESENCE optional }|

 { ID id-GNB-CU-TNL-Association-To-Remove-List CRITICALITY ignore TYPE GNB-CU-TNL-Association-To-Remove-List PRESENCE optional }|

 { ID id-GNB-CU-TNL-Association-To-Update-List CRITICALITY ignore TYPE GNB-CU-TNL-Association-To-Update-List PRESENCE optional }|

 { ID id-Cells-to-be-Barred-List CRITICALITY ignore TYPE Cells-to-be-Barred-List PRESENCE optional }|

 { ID id-Protected-EUTRA-Resources-List CRITICALITY reject TYPE Protected-EUTRA-Resources-List PRESENCE optional }|

 { ID id-Neighbour-Cell-Information-List CRITICALITY ignore TYPE Neighbour-Cell-Information-List PRESENCE optional }|

 { ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|

 { ID id-UL-BH-Non-UP-Traffic-Mapping CRITICALITY reject TYPE UL-BH-Non-UP-Traffic-Mapping PRESENCE optional }|

 { ID id-BAPAddress CRITICALITY ignore TYPE BAPAddress PRESENCE optional }|

 { ID id-CCO-Assistance-Information CRITICALITY ignore TYPE CCO-Assistance-Information PRESENCE optional }|

 { ID id-CellsForSON-List CRITICALITY ignore TYPE CellsForSON-List PRESENCE optional }|

 { ID id-gNB-CU-Name CRITICALITY ignore TYPE GNB-CU-Name PRESENCE optional }|

 { ID id-Extended-GNB-CU-Name CRITICALITY ignore TYPE Extended-GNB-CU-Name PRESENCE optional }|

 { ID id-Cells-Allowed-to-be-Deactivated-List CRITICALITY ignore TYPE Cells-Allowed-to-be-Deactivated-List PRESENCE optional }|

 { ID id-Predicted-CCO-Assistance-Information CRITICALITY ignore TYPE Predicted-CCO-Assistance-Information PRESENCE optional },

 ...

}

9.4.5 Information Element Definitions

-- ASN1START

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

--

-- Information Element Definitions

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

F1AP-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 id-gNB-CUSystemInformation,

*\*\*\* unmodified text omitted \*\*\**

 maxnoAggregatedPosSRSCombinations

<<<<<<<<<<<<<<<<<<<<Skipped Unchanged part >>>>>>>>>>>>>>>>>>>>

-- F

Future-Coverage-Modification-Notification ::= SEQUENCE {

 future-coverage-Modification-List Future-Coverage-Modification-List,

 iE-Extensions ProtocolExtensionContainer { { Future-Coverage-Modification-Notification-ExtIEs} } OPTIONAL,

 ...

}

Future-Coverage-Modification-Notification-ExtIEs F1AP-PROTOCOL-EXTENSION ::={

 ...

}

Future-Coverage-Modification-List ::= SEQUENCE (SIZE (1..maxCellingNBDU)) OF Future-Coverage-Modification-Item

Future-Coverage-Modification-Item ::= SEQUENCE {

 nRCGI NRCGI,

 futurecellCoverageState FutureCellCoverageState,

 futureSSBCoverageModificationList FutureSSBCoverageModification-List OPTIONAL,

 timeforFutureCoverageModification TimeforFutureCoverageModification OPTIONAL,

 futureCoverageModificationCause Predicted-CCO-issue-detection OPTIONAL,

 iE-Extension ProtocolExtensionContainer { { Future-Coverage-Modification-Item-ExtIEs} } OPTIONAL,

 ...

}

Future-Coverage-Modification-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

FutureCellCoverageState ::= INTEGER (1..63, ...)

FutureSSBCoverageModification-List ::= SEQUENCE (SIZE (1..maxnoofSSBAreas)) OF FutureSSBCoverageModification-Item

FutureSSBCoverageModification-Item::= SEQUENCE {

 sSBIndex INTEGER(0..63),

 futureSSBCoverageState FutureSSBCoverageState,

 iE-Extensions ProtocolExtensionContainer { { FutureSSBCoverageModification-Item-ExtIEs} } OPTIONAL,

...

}

FutureSSBCoverageModification-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

FutureSSBCoverageState ::= INTEGER (1..15, ...)

-- T

TimeforFutureCoverageModification ::= INTERGER (1..FFS, ...)

TimeforPredictedCCOIssue ::= INTEGER (1..FFS, ...)

-- P

Predicted-CCO-Assistance-Information ::= SEQUENCE {

 predicted-CCO-issue-detection Predicted-CCO-issue-detection OPTIONAL,

 predictedAffectedCellsAndBeams-List AffectedCellsAndBeams-List OPTIONAL,

 timeforPredictedCCOIssue TimeforPredictedCCOIssue, OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { Predicted-CCO-Assistance-Information-ExtIEs} } OPTIONAL,

 ...

}

Predicted-CCO-Assistance-Information-ExtIEs F1AP-PROTOCOL-EXTENSION ::={

 ...

}

Predicted-CCO-issue-detection ::= ENUMERATED {coverage, cell-edge-capacity, ...}

<<<<<<<<<<<<<<<<<<<<Next Change>>>>>>>>>>>>>>>>>>>>

9.4.7 Constant Definitions

<<<<<<<<<<<<<<<<<<<<Skipped Unchanged part >>>>>>>>>>>>>>>>>>>>

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

--

-- IEs

--

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

id-Cause ProtocolIE-ID ::= 0

*\*\*\* unmodified text omitted \*\*\**

id-TagIDPointer ProtocolIE-ID ::= 853

id-Future-Coverage-Modification-Notification ProtocolIE-ID ::= xxx

id-Predicted-CCO-Assistance-Information ProtocolIE-ID ::= yyy

END

-- ASN1STOP

<<<<<<<<<<<<<<<<<<<< End of Changes >>>>>>>>>>>>>>>>>>>>