3GPP TSG-RAN WG3 #114-e R3-216076

1-11 November 2021

Online

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.423** | **CR** | **0674** | **rev** | **1** | **Current version:** | **16.7.0** |  |
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| *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:***  | Support flexible I-RNTI partitioning [RRCInactive] |
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| ***Source to WG:*** | ZTE, Radisys, Reliance JIO, China Telecom, Ericsson, Nokia, Nokia Shanghai Bell, Deutsche Telekom |
| ***Source to TSG:*** | RAN3 |
|  |  |
| ***Work item code:*** | TEI17  |  | ***Date:*** | 2021-10-17 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe 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)* |
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| ***Reason for change:*** | According to the current non-standardized structure of I-RNTI, there still exists ambiguity issue when new NG-RAN node identifies the old NG-RAN node based on the received I-RNTI, especially for the NG-RAN nodes belonging to different vendors.  |
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| ***Summary of change:*** | 1. Addition of Local NG-RAN Node Identifier
2. Addition of I-RNTI structure indication
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| ***Consequences if not approved:*** | The ambiguity issue for new NG-RAN Node to identify old NG-RAN Node and also the ambiguity issue for old NG-RAN Node to identify UE context still exist. |
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| ***Clauses affected:*** | 8.4.1, 8.4.2, 9.1.3.1, 9.1.3.2, 9.1.3.4, 9.1.3.5, 9.2.2.x(new), 9.2.3.40, 9.2.3.46, ASN.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev0: R3-214764 |

*Start of the first change*

### 8.4.1 Xn Setup

8.4.1.1 General

The purpose of the Xn Setup procedure is to exchange application level configuration data needed for two NG-RAN nodes to interoperate correctly over the Xn-C interface.

NOTE 1: If Xn-C signalling transport is shared among multiple Xn-C interface instances, one Xn Setup procedure is issued per Xn-C interface instance to be setup, i.e. several Xn Setup procedures may be issued via the same TNL association after that TNL association has become operational.

NOTE 2: Exchange of application level configuration data also applies between two NG-RAN nodes in case the SN (i.e. the gNB) does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [8]. How to use this information when this option is used is not explicitly specified.

The procedure uses non UE-associated signalling.

8.4.1.2 Successful Operation

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**Figure 8.4.1.2: Xn Setup, successful operation**

The NG-RAN node1 initiates the procedure by sending the XN SETUP REQUEST message to the candidate NG-RAN node2. The candidate NG-RAN node2 replies with the XN SETUP RESPONSE message.

The *AMF Region Information* IE in the XN SETUP REQUEST message shall contain a complete list of Global AMF Region IDs to which the NG-RAN node1 belongs. The *AMF Region Information* IE in the XN SETUP RESPONSE message shall contain a complete list of Global AMF Region IDs to which the NG-RAN node2 belongs.

The *List of Served Cells NR* IE and the *List of Served Cells E-UTRA* IE, if contained in the XN SETUP REQUEST message, shall contain a complete list of cells served by NG-RAN node1 or, if supported, a partial list of served cells together with the *Partial List Indicator* IE. The *List of Served Cells NR* IE and the *List of Served Cells E-UTRA* IE, if contained in the XN SETUP RESPONSE message, shall contain a complete list of cells served by NG-RAN node2 or, if supported, a partial list of served cells together with the *Partial List Indicator* IE.

If Supplementary Uplink is configured at the NG-RAN node1, the NG-RAN node1 shall include in the XN SETUP REQUEST message the *SUL Information* IE and the *Supported SUL band List* IE for each served cell where supplementary uplink is configured.

If Supplementary Uplink is configured at the NG-RAN node2, the candidate NG-RAN node2 shall include in the XN SETUP RESPONSE message the *SUL Information* IE and the *Supported SUL band List* IE for each served cell where supplementary uplink is configured.

If the NG-RAN node1 is an ng-eNB, it may include the *Protected E-UTRA Resource Indication* IE into the XN SETUP REQUEST. If the XN SETUP REQUEST sent by an ng-eNB contains the *Protected E-UTRA Resource Indication* IE, the receiving gNB should take this into account for cell-level resource coordination with the ng-eNB. The gNB shall consider the received *Protected E-UTRA Resource Indication* IE content valid until reception of a new update of the IE for the same ng-eNB.

The protected resource pattern indicated in the *Protected E-UTRA Resource Indication* IE is not valid in subframes indicated by the *Reserved Subframes* IE, as well as in the non-control region of the MBSFN subframes i.e. it is valid only in the control region therein. The size of the control region of MBSFN subframes is indicated in the *Protected E-UTRA Resource Indication* IE.

In case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the XN SETUP REQUEST message and the XN SETUP RESPONSE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

If the *Intended TDD DL-UL Configuration NR* IE is included in the XN SETUP REQUEST or XN SETUP RESPONSE message, the receiving NG-RAN node should take this information into account for cross-link interference management and/or NR-DC power coordination with the sending NG-RAN node. The receiving NG-RAN node shall consider the received *Intended TDD DL-UL Configuration NR* IE content valid until reception of an update of the IE for the same cell(s).

If the *TNL Configuration Info* IE is contained in the XN SETUP REQUEST message, the NG-RAN node2 shall, if supported, take this IE into account for IPSec establishment.

If the *TNL Configuration Info* IE is contained in the XN SETUP RESPONSE message, the NG-RAN node1 shall, if supported, take this IE into account for IPSec establishment.

If the *Partial List Indicator NR* IE or the *Partial List Indicator NR* IE is set to "partial" in the XN SETUP REQUEST message the candidate NG-RAN node2 shall, if supported, assume that the *List of Served Cells NR* IE or the *List of Served Cells E-UTRA* IE in the XN SETUP REQUEST message includes a partial list of cells.

If the *Partial List Indicator NR* IE or the *Partial List Indicator NR* IE is set to "partial" in the XN SETUP RESPONSE message from the candidate NG-RAN node2, the NG-RAN node1 shall, if supported, assume that the *List of Served Cells NR* IE or the *List of Served Cells E-UTRA* IE in the XN SETUP RESPONSE message includes a partial list of cells.

If the *Cell and Capacity Assistance Information NR* IE or the *Cell and Capacity Assistance Information E-UTRA* IE is present in the XN SETUP REQUEST message the candidate NG-RAN node2 shall, if supported, use it when generating the list of NG-RAN served cell information to include in the XN SETUP RESPONSE message.

If the *Cell and Capacity Assistance Information NR* IE or the *Cell and Capacity Assistance Information E-UTRA* IE is present in the XN SETUP RESPONSE message from the candidate NG-RAN node2, the NG-RAN node1 shall, if supported, store the collected information to be used for future NG-RAN node interface management.

If the *CSI-RS Transmission Indication* IE is contained in the XN SETUP REQUEST message, the NG-RAN node2 shall, if supported, take this IE into account for neighbour cell’s CSI-RS measurement.

If the *CSI-RS Transmission Indication* IE in the XN SETUP RESPONSE message, the NG-RAN node1 shall, if supported, take this IE into account for neighbour cell’s CSI-RS measurement.

The initiating NG-RAN node1 may include the *PRACH Configuration* IE (for served E-UTRA cells) or the *NR Cell PRACH Configuration* IE (for served NR cells) or the *NPRACH Configuration* IE (for served NB-IoT cells) in the XN SETUP REQUEST message. The candidate NG-RAN node2 may also include the *PRACH Configuration* IE (for served E-UTRA cells) or *NR Cell PRACH Configuration* IE (for served NR cells) or the *NPRACH Configuration* IE (for served NB-IoT cells) in the XN SETUP RESPONSE message. The NG-RAN node receiving the IE may use this information for RACH optimisation.

The XN SETUP REQUEST message may contain for each cell served by NG-RAN node1 NPN related broadcast information. The XN SETUP RESPONSE message may contain for each cell served by NG-RAN node2 NPN related broadcast information.

If the *SFN Offset* IE is included in the XN SETUP REQUEST or XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, use this information to deduce the SFN0 time offset of the reported cell.The receiving NG-RAN node shall consider the received *SFN Offset* IE content valid until reception of an update of the IE for the same cell(s).

If the *Local NG-RAN Node Identifier* IE is present in the XN SETUP REQUEST message, the NG-RAN node2 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node1.

If the *Local NG-RAN Node Identifier* IE is present in the XN SETUP RESPONSE message, the NG-RAN node1 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node2.

If the *Neighbour NG-RAN Node List* IE is present in the XN SETUP REQUEST message, the NG-RAN node2 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node1.

If the *Neighbour NG-RAN Node List* IE is present in the XN SETUP RESPONSE message, the NG-RAN node1 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node2.

**Interactions with other procedures:**

If the NG-RAN node1 receives a XN SETUP RESPONSE message containing a *Local NG-RAN Node Identifier* identical to the *Local NG-RAN Node Identifier* included in the corresponding XN SETUP REQUEST, the NG-RAN node1 should initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE a new *Local NG-RAN Node Identifier*, different from the *Local NG-RAN Node Identifier* of each of its neighbour NG-RAN Nodes.

If the NG-RAN node1 receives a XN SETUP RESPONSE message containing a *Local NG-RAN Node Identifier* within the *Neighbour NG-RAN Node List* IE identical to the *Local NG-RAN Node Identifier* included in the corresponding XN SETUP REQUEST, the NG-RAN node1 should initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE a new *Local NG-RAN Node Identifier*, different from the *Local NG-RAN Node Identifier* of each of its neighbour NG-RAN Nodes.

*Start of next change*

8.4.2 NG-RAN node Configuration Update

8.4.2.1 General

The purpose of the NG-RAN node Configuration Update procedure is to update application level configuration data needed for two NG-RAN nodes to interoperate correctly over the Xn-C interface.

NOTE: Update of application level configuration data also applies between two NG-RAN nodes in case the SN (i.e. the gNB) does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [8]. How to use this information when this option is used is not explicitly specified.

The procedure uses non UE-associated signalling.

8.4.2.2 Successful Operation

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**Figure 8.4.2.2-1: NG-RAN node Configuration Update, successful operation**

The NG-RAN node1 initiates the procedure by sending the NG-RAN NODE CONFIGURATION UPDATE message to a peer NG-RAN node2.

If Supplementary Uplink is configured at the NG-RAN node1, the NG-RAN node1 shall include in the NG-RAN NODE CONFIGURATION UPDATE message the *SUL Information* IE and the *Supported SUL band List* IE for each cell added in the *Served NR Cells To Add* IE and in the *Served NR Cells To Modify* IE.

If Supplementary Uplink is configured at the NG-RAN node2, the NG-RAN node2 shall include in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message the *SUL Information* IE and the *Supported SUL band List* IE for each cell added in the *Served NR Cells* IE if any.

If the *TAI Support List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message, the receiving node shall replace the previously provided *TAI Support List* IE by the received *TAI Support List* IE.

If the *Cell Assistance Information NR* IE is present, the NG-RAN node2 shall, if supported, use it to generate the *Served NR Cells* IE and include the list in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message.

If the *Cell Assistance Information E-UTRA* IE is present, the NG-RAN node2 shall, if supported, use it to generate the *Served E-UTRA Cells* IE and include the list in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message.

If the *Partial List Indicator NR* IE is included in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message and set to "partial" the NG-RAN node1 shall, if supported, assume that the *Served NR Cells* IE in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message includes a partial list of NR cells.

If the *Partial List Indicator E-UTRA* IE is included in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message and set to "partial" the NG-RAN node1 shall, if supported, assume that the *Served E-UTRA Cells* IE in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message includes a partial list of NR cells.

If the *Cell and Capacity Assistance Information NR* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message from the candidate NG-RAN node2, the NG-RAN node1 shall, if supported, store the collected information to be used for future NG-RAN node interface management.

If the *Cell and Capacity Assistance Information E-UTRA* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message from the candidate NG-RAN node2, the NG-RAN node1 shall, if supported, store the collected information to be used for future NG-RAN node interface management.

Upon reception of the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall update the information for NG-RAN node1 as follows:

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the NG-RAN NODE CONFIGURATION UPDATE message and the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

If the *TNL Configuration Info* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall take this IE into account for IPSec establishment.

If the *TNL Configuration Info* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node1 shall take this IE into account for IPSec establishment.

If the *CSI-RS Transmission Indication* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall take this IE into account for neighbour cell’s CSI-RS measurement.

The NG-RAN NODE CONFIGURATION UPDATE message may contain for each cell served by NG-RAN node1 NPN related broadcast information. The NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message may contain for each cell served by NG-RAN node2 NPN related broadcast information.

If the *Local NG-RAN Node Identifier* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node1.

If the *Local NG-RAN Node Identifier* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node1 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node2.

If the *Neighbour NG-RAN Node List* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node1.

If the *Neighbour NG-RAN Node List* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node1 shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node2.

**Update of Served Cell Information NR:**

- If *Served Cells NR To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall add cell information according to the information in the *Served Cell Information* *NR* IE.

- If *Served Cells NR To Modify* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall modify information of cell indicated by *Old NR-CGI* IE according to the information in the *Served Cell Information* *NR* IE.

- When either served cell information or neighbour information of an existing served cell in NG-RAN node1 need to be updated, the whole list of neighbouring cells, if any, shall be contained in the *Neighbour Information NR* IE. The NG-RAN node2 shall overwrite the served cell information and the whole list of neighbour cell information for the affected served cell.

- If the *Deactivation Indication* IE is contained in the *Served Cells NR To Modify* IE, it indicates that the concerned cell was switched off to lower energy consumption.

- If *Served Cells NR To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall delete information of cell indicated by *Old NR-CGI* IE.

- If the *Intended TDD DL-UL Configuration NR* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 should take this information into account for cross-link interference management and/or NR-DC power coordination with the NG-RAN node1. The NG-RAN node2 shall consider the received *Intended TDD DL-UL Configuration NR* IE content valid until reception of a new update of the IE for the same NG-RAN node2.

- If the *NR Cell PRACH Configuration* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *SFN Offset* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE shall, if supported, use this information to update the SFN0 time offset of the reported cell.

**Update of Served Cell Information** **E-UTRA:**

- If *Served Cells* *E-UTRA To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall add cell information according to the information in the *Served Cell Information* *E-UTRA* IE.

- If *Served Cells E-UTRA To Modify* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall modify information of cell indicated by *Old ECGI* IE according to the information in the *Served Cell Information* *E-UTRA* IE.

- When either served cell information or neighbour information of an existing served cell in NG-RAN node1 need to be updated, the whole list of neighbouring cells, if any, shall be contained in the *Neighbour Information E-UTRA* IE. The NG-RAN node2 shall overwrite the served cell information and the whole list of neighbour cell information for the affected served cell.

- If the *Deactivation Indication* IE is contained in the *Served Cells E-UTRA To Modify* IE, it indicates that the concerned cell was switched off to lower energy consumption.

- If the *Served Cells E-UTRA To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall delete information of cell indicated by *Old ECGI* IE.

- If the *Protected E-UTRA Resource Indication* IE is included into the NG-RAN NODE CONFIGURATION UPDATE (inside the *Served Cell Information* *E-UTRA* IE), the receiving gNB should take this into account for cell-level resource coordination with the ng-eNB. The gNB shall consider the received *Protected E-UTRA Resource Indication* IE content valid until reception of a new update of the IE for the same ng-eNB. The protected resource pattern indicated in the *Protected E-UTRA Resource Indication* IE is not valid in subframes indicated by the *Reserved Subframes* IE (contained in E-UTRA - NR CELL RESOURCE COORDINATION REQUEST messages), as well as in the non-control region of the MBSFN subframes i.e. it is valid only in the control region therein. The size of the control region of MBSFN subframes is indicated in the *Protected E-UTRA Resource Indication* IE.

- If the *PRACH Configuration* IE is contained in the *Served Cell Information E-UTRA* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *NPRACH Configuration* IE is contained in the *Served Cell Information E-UTRA* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *SFN Offset* IE is contained in *Served Cell Information E-UTRA* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE shall, if supported, use this information to update the SFN0 time offset of the reported cell.

**Update of TNL addresses for SCTP associations:**

If the *TNL Association to Add List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall, if supported, use it to establish the TNL association(s) with the NG-RAN node1. The NG-RAN node2 shall report to the NG-RAN node1, in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the successful establishment of the TNL association(s) with the NG-RAN node1 as follows:

- A list of successfully established TNL associations shall be included in the *TNL Association Setup List* IE;

- A list of TNL associations that failed to be established shall be included in the *TNL Association Failed to Setup List* IE.

If the *TNL Association to Remove List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message the NG-RAN node2 shall, if supported, initiate removal of the TNL association(s) indicated by the received Transport Layer information towards the NG-RAN node1.

If the *TNL Association to Update List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message the NG-RAN node2 shall, if supported, update the TNL association(s) indicated by the received Transport Layer information towards the NG-RAN node1.

**Update of AMF Region Information:**

- If *AMF Region Information To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall add the AMF Regions to its AMF Region List.

- If *AMF Region Information To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall remove the AMF Regions from its AMF Region List.

**Interactions with other procedures:**

If the NG-RAN node1 receives a NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message containing a *Local NG-RAN Node Identifier* identical to the *Local NG-RAN Node Identifier* included in the corresponding NG-RAN NODE CONFIGURATION UPDATE, the NG-RAN node1 should initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE a new *Local NG-RAN Node Identifier*, different from the *Local NG-RAN Node Identifier* of each of its neighbour NG-RAN Nodes.

If the NG-RAN node1 receives a NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message containing a *Local NG-RAN Node Identifier* within the *Neighbour NG-RAN Node List* IE identical to the *Local NG-RAN Node Identifier* included in the corresponding NG-RAN NODE CONFIGURATION UPDATE, the NG-RAN node1 should initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE a new *Local NG-RAN Node Identifier*, different from the *Local NG-RAN Node Identifier* of each of its neighbour NG-RAN Nodes.

*Start of next change*

9.1.3.1 XN SETUP REQUEST

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer application data for an Xn-C interface instance.

Direction: NG-RAN node1 🡪 NG-RAN node2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| Global NG-RAN Node ID | M |  | 9.2.2.3 |  | YES | reject |
| TAI Support List | M |  | 9.2.3.20 | List of supported TAs and associated characteristics. | YES | reject |
| AMF Region Information | M |  | 9.2.3.83 | Contains a list of all the AMF Regions to which the NG-RAN node belongs. | YES | reject |
| **List of Served Cells NR** |  | *0 .. <maxnoofCellsinNG-RAN node>* |  | Contains a list of cells served by the gNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the gNB | YES | reject |
| >Served Cell Information NR | M |  | 9.2.2.11 |  | – |  |
| >Neighbour Information NR | O |  | 9.2.2.13 |  | – |  |
| >Neighbour Information E-UTRA | O |  | 9.2.2.14 |  | – |  |
| **List of Served Cells E-UTRA** |  | *0 .. <maxnoofCellsinNG-RAN node>* |  | Contains a list of cells served by the ng-eNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the ng-eNB | YES | reject |
| >Served Cell Information E-UTRA | M |  | 9.2.2.12 |  | – |  |
| >Neighbour Information NR | O |  | 9.2.2.13 |  | – |  |
| >Neighbour Information E-UTRA | O |  | 9.2.2.14 |  | – |  |
| Interface Instance Indication | O |  | 9.2.2.39 |  | YES | reject |
| TNL Configuration Info | O |  | 9.2.3.96 |  | YES | ignore |
| Partial List Indicator NR | O |  | Partial List Indicator9.2.2.46 | Value "partial" indicates that a partial list of cells is included in the *List of Served Cells* *NR* IE.  | YES | ignore |
| Cell and Capacity Assistance Information NR | O |  | 9.2.2.41 | Contains NR cell related assistance information. | YES | ignore |
| Partial List Indicator E-UTRA | O |  | Partial List Indicator9.2.2.46 | Value "partial" indicates that a partial list of cells is included in the *List of Served Cells E-UTRA.*  | YES | ignore |
| Cell and Capacity Assistance Information E-UTRA | O |  | 9.2.2.42 | Contains E-UTRA cell related assistance information.  | YES | ignore |
| Local NG-RAN Node Identifier | O |  | 9.2.2.x |  | YES | ignore |
| Neighbour NG-RAN Node List |  | *0..<maxnoofNeighbourNG-RAN nodes>* |  |  | – | – |
| > Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – | – |
| > Local NG-RAN Node Identifier | M |  | 9.2.2.x |  | – | – |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofCellsinNG-RAN node | Maximum no. cells that can be served by a NG-RAN node. Value is 16384. |
| maxnoofNeighbourNG-RAN nodes | Maximim no. of neighbour NG-RAN nodes. Value is 1024. |

9.1.3.2 XN SETUP RESPONSE

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer application data for an Xn-C interface instance.

Direction: NG-RAN node2 🡪 NG-RAN node1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| Global NG-RAN Node ID | M |  | 9.2.2.3 |  | YES | reject |
| TAI Support List | M |  | 9.2.3.20 | List of supported TAs and associated characteristics. | YES | reject |
| **List of Served Cells NR** |  | *0 .. <**maxnoofCellsinNG-RAN node>* |  | Contains a list of cells served by the gNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the gNB | YES | reject |
| >Served Cell Information NR | M |  | 9.2.2.11 |  | – |  |
| >Neighbour Information NR | O |  | 9.2.2.13 |  | – |  |
| >Neighbour Information E-UTRA | O |  | 9.2.2.14 |  | – |  |
| **List of Served Cells E-UTRA** |  | *0 .. <maxnoofCellsinNG-RAN node>* |  | Contains a list of cells served by the ng-eNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the gNB | YES | reject |
| >Served Cell Information E-UTRA | M |  | 9.2.2.12 |  | – |  |
| >Neighbour Information NR | O |  | 9.2.2.13 |  | – |  |
| >Neighbour Information E-UTRA | O |  | 9.2.2.14 |  | – |  |
| Criticality Diagnostics | O |  | 9.2.3.3 |  | YES | ignore |
| AMF Region Information | O |  | 9.2.3.83 | Contains a list of all the AMF Regions to which the NG-RAN node belongs. | YES | reject |
| Interface Instance Indication | O |  | 9.2.2.39 |  | YES | reject |
| TNL Configuration Info | O |  | 9.2.3.96 |  | YES | ignore |
| Partial List Indicator NR | O |  | Partial List Indicator9.2.2.46 | Value "partial" indicates that a partial list of cells is included in the *List of Served Cells* *NR* IE.  | YES | ignore |
| Cell and Capacity Assistance Information NR | O |  | 9.2.2.41 | Contains NR cell related assistance information. | YES | ignore |
| Partial List Indicator E-UTRA | O |  | Partial List Indicator9.2.2.46 | Value "partial" indicates that a partial list of cells is included in the *List of Served Cells E-UTRA.*  | YES | ignore |
| Cell and Capacity Assistance Information E-UTRA | O |  | 9.2.2.42 | Contains E-UTRA cell related assistance information.  | YES | ignore |
| Local NG-RAN Node Identifier | O  |  | 9.2.2.x |  | YES | ignore |
| Neighbour NG-RAN Node List |  | *0..<maxnoofNeighbourNG-RAN nodes>* |  |  | – |  |
| > Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – |  |
| > Local NG-RAN Node Identifier | M |  | 9.2.2.x |  | – |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofCellsinNG-RAN node | Maximum no. cells that can be served by a NG-RAN node. Value is 16384. |
| maxnoofNeighbourNG-RAN nodes | Maximim no. of neighbour NG-RAN nodes. Value is 1024. |

*Start of next change*

9.1.3.4 NG-RAN NODE CONFIGURATION UPDATE

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer updated information for an Xn-C interface instance.

Direction: NG-RAN node1 🡪 NG-RAN node2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| TAI Support List | O |  | 9.2.3.20 | List of supported TAs and associated characteristics. | GLOBAL | reject |
| CHOICE *Initiating NodeType* | M |  |  |  | YES | ignore |
| *>gNB* |  |  |  |  |  |  |
| >>Served Cells To Update NR | O |  | 9.2.2.15 |  | YES | ignore |
| >>Cell Assistance Information NR | O |  | 9.2.2.17 |  | YES | ignore |
| >>Cell Assistance Information E-UTRA | O |  | 9.2.2.43 |  | YES | ignore |
| *>ng-eNB* |  |  |  |  |  |  |
| >>Served Cells to Update E-UTRA | O |  | 9.2.2.16 |  | YES | ignore |
| >>Cell Assistance Information NR | O |  | 9.2.2.17 |  | YES | ignore |
| >>Cell Assistance Information E-UTRA | O |  | 9.2.2.43 |  | YES | ignore |
| **TNLA To Add List**  |  | *0..1* |  |  | YES | ignore |
| **>TNLA To Add Item** |  | *1..<maxnoofTNLAssociations>* |  |  | – |  |
| >>TNLA Transport Layer Information | M |  | CP Transport Layer Information9.2.3.31 | CP Transport Layer Information of NG-RAN node1 | – |  |
| >> TNL Association Usage | M |  | 9.2.3.84 |  | – |  |
| **TNLA To Update List**  |  | *0..1* |  |  | YES | ignore |
| **>TNLA To Update Item** |  | *1..<maxnoofTNLAssociations>* |  |  | – |  |
| >>TNLA Transport Layer Information | M |  | CP Transport Layer Information9.2.3.31 | CP Transport Layer Information of NG-RAN node1 | – |  |
| >> TNL Association Usage | O |  | 9.2.3.84 |  | – |  |
| **TNLA To Remove List**  |  | *0..1* |  |  | YES | ignore |
| **>TNLA To Remove Item** |  | *1..<maxnoofTNLAssociations>* |  |  | – |  |
| >>TNLA Transport Layer Information | M |  | CP Transport Layer Information9.2.3.31 | CP Transport Layer Information of NG-RAN node1 | – |  |
| Global NG-RAN Node ID | O |  | 9.2.2.3 |  | YES | reject |
| AMF Region Information To Add | O |  | AMF Region Information 9.2.3.83 | List of all added AMF Regions to which the NG-RAN node belongs. | YES | reject |
| AMF Region Information To Delete | O |  | AMF Region Information 9.2.3.83 | List of all deleted AMF Regions to which the NG-RAN node belongs. | YES | reject |
| Interface Instance Indication | O |  | 9.2.2.39 |  | YES | reject |
| TNL Configuration Info | O |  | 9.2.3.96 |  | YES | ignore |
| Local NG-RAN Node Identifier | O |  | 9.2.2.x |  | YES | ignore |
| Neighbour NG-RAN Node List |  | *0..<maxnoofNeighbourNG-RAN nodes>* |  |  | – |  |
| *>* Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – |  |
| > Local NG-RAN Node Identifier | M |  | 9.2.2.x |  | – |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between the NG RAN nodes. Value is 32. |
| maxnoofNeighbourNG-RAN nodes | maxnoofNeighbourNG-RAN nodes |

9.1.3.5 NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by a neighbouring NG-RAN node to a peer node to acknowledge update of information for a TNL association.

Direction: NG-RAN node2 🡪 NG-RAN node1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| CHOICE Responding NodeType | M |  |  |  | YES | ignore |
| >*ng-eNB* |  |  |  |  |  |  |
| >*gNB* |  |  |  |  |  |  |
| **>>Served E-UTRA Cells** |  | *0 .. < maxnoofCellsinNG-RANnode>* |  | Complete or limited list of cells served by an ng-eNB, if requested by NG-RAN node1. | YES | ignore |
| >>>Served Cell Information E-UTRA | M |  | 9.2.2.12 |  | – |  |
| >>>Neighbour Information NR | O |  | 9.2.2.13 | NR neighbours. | – |  |
| >>>Neighbour Information E-UTRA | O |  | 9.2.2.14 | E-UTRA neighbours | – |  |
| >>Partial List Indicator E-UTRA | O |  | Partial List Indicator9.2.2.46 | Value "partial" indicates that a partial list of cells is included in the *Served E-UTRA Cells* IE  | YES | ignore |
| >>Cell and Capacity Assistance Information E-UTRA | O |  | 9.2.2.42 | Contains E-UTRA cell related assistance information. | YES | ignore |
| **>>Served NR Cells** |  | *0 .. < maxnoofCellsinNG-RANnode>* |  | Complete or limited list of cells served by a gNB, if requested by NG-RAN node1. | – |  |
| >>>Served Cell Information NR | M |  | 9.2.2.11 |  | – |  |
| >>>Neighbour Information NR | O |  | 9.2.2.13 | NR neighbours. | – |  |
| >>>Neighbour Information E-UTRA | O |  | 9.2.2.14 | E-UTRA neighbours | – |  |
| >>Partial List Indicator NR | O |  | Partial List Indicator9.2.2.46 | Value "partial" indicates that a partial list of cells is included in the *Served NR Cells* IE  | YES | ignore |
| >>Cell and Capacity Assistance Information NR | O |  | 9.2.2.41 | Contains NR cell related assistance information. | YES | ignore |
| **TNLA Setup List**  |  | *0..1* |  |  | YES | ignore |
| **>TNLA Setup Item** |  | *1..<maxnoofTNLAssociations>* |  |  | – |  |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Information9.2.3.31 | CP Transport Layer Information as received from NG-RAN node1 | – |  |
| **TNLA Failed to Setup Lis** |  | *0..1* |  |  | YES | ignore |
| **>TNLA Failed To Setup Item** |  | *1..<maxnoofTNLAssociations>* |  |  | – |  |
| >>TNLA Transport Layer Address | M |  | CP Transport Layer Information9.2.3.31 | CP Transport Layer Information as received from NG-RAN node1 | – |  |
| >>Cause | M |  | 9.2.3.2 |  | – |  |
| Criticality Diagnostics | O |  | 9.2.3.3 |  | YES | ignore |
| Interface Instance Indication | O |  | 9.2.2.39 |  | YES | reject |
| TNL Configuration Info | O |  | 9.2.3.96 |  | YES | ignore |
| Local NG-RAN Node Identifier | O |  | 9.2.2.x |  | YES | ignore |
| Neighbour NG-RAN Node List |  | *0..<maxnoofNeighbourNG-RAN nodes>* |  |  | – |  |
| > Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – |  |
| > Local NG-RAN Node Identifier | M |  | 9.2.2.x |  | – |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofCellsinNGRANnode | Maximum no. cells that can be served by an NG-RAN node.Value is 16384. |
| maxnoofTNLAssociations | Maximum numbers of TNL Associations between NG-RAN nodes. Value is 32. |
| maxnoofNeighbourNG-RAN nodes | Maximim no. of neighbour NG-RAN nodes. Value is 1024. |

*Start of next change*

#### 9.2.2.x Local NG-RAN Node Identifier

This IE is used to resolve a Global gNB ID from an I-RNTI and obtain a reference to an UE context at RRC Resume.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *Full I-RNTI* | O |  |  |  |
| > CHOICE I-RNTI profile |  |  |  |  |
| >> I-RNTI profile 0 |  |  |  |  |
| >>> Local Node Identifier I-RNTI profile 0 | M |  | BIT STRING (SIZE(21)) |  |
| >> I-RNTI profile 1 |  |  |  |  |
| >>> Local Node Identifier I-RNTI profile 1 | M |  | BIT STRING (SIZE(18)) |  |
| >> I-RNTI profile 2 |  |  |  |  |
| >>> Local Node Identifier I-RNTI profile 2 | M |  | BIT STRING (SIZE(15)) |  |
| >> I-RNTI profile 3 |  |  |  |  |
| >>> Local Node Identifier I-RNTI profile 3 | M |  | BIT STRING (SIZE(12)) |  |
| CHOICE *Short I-RNTI* | O |  |  |  |
| > CHOICE I-RNTI profile |  |  |  |  |
| >> I-RNTI profile 0 |  |  |  |  |
| >>> Local Node Identifier I-RNTI profile 0 | M |  | BIT STRING (SIZE(8)) |  |
| >> I-RNTI profile 1 |  |  |  |  |
| >>> Local Node Identifier I-RNTI profile 1 | M |  | BIT STRING (SIZE(6)) |  |

*Start of next change*

9.2.3.40 UE Context ID

This IE is used to address a UE Context within an NG-RAN node.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| CHOICE *UE Context ID* | M |  |  |  |
| >*RRC Resume* |  |  |  |  |
| >>I-RNTI | M |  | 9.2.3.46 |  |
| >>Allocated C-RNTI | M |  | BIT STRING (SIZE (16)) | Temporary C-RNTI or C-RNTI allocated to the UE by the cell where the RRC connection has been requested to be resumed, contained in the MAC RAR or MAC MSGB as defined in TS 38.321 [35] or in TS 36.321 [36]. |
| >>Access PCI | M |  | NG-RAN Cell PCI9.2.2.10 | The cell PCI where the RRC connection has been requested to be resumed. |
| *>RRC Reestablishment*  |  |  |  |  |
| >>C-RNTI | M |  | BIT STRING (SIZE (16)) | C-RNTI contained in the *RRCReestablishmentRequest* message (TS 38.331 [10]) or *RRCConnectionReestablishmentRequest* message (TS 36.331 [14]). |
| >>Failure Cell PCI | M |  | NG-RAN Cell PCI9.2.2.10 |  |

*Start of next change*

9.2.3.46 I-RNTI

The I-RNTI is defined for allocation in an NR or E-UTRA serving cell as a reference to a UE Context within an NG-RAN node. The I-RNTI is partitioned into two parts, the first part identifies the NG-RAN node that allocated the I-RNTI and the second part identifies the UE context stored in this NG-RAN node,or the I-RNTI is partitioned into three parts, the first part indicates the length of NG-RAN Node ID part of the NG-RAN Nodethat allocated the I-RNTI, the second part identifies the NG-RAN node that allocated the I-RNTI and the third part identifies the UE context stored in this NG-RAN node, refer to Annex C in TS 38.300[9].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| CHOICE *I-RNTI* |  |  |  |  |
| >*I-RNTI full* |  |  |  |  |
| >>I-RNTI full | M |  | BIT STRING (SIZE (40)) | This IE is used to identify the suspended UE context of a UE in RRC\_INACTIVE using 40 bits (refer to *I-RNTI-Value* IE in TS 38.331 [10] and *I-RNTI* IE in TS 36.331 [14]). |
| >*I-RNTI short* |  |  |  |  |
| >>I-RNTI short | M |  | BIT STRING (SIZE (24)) | This IE is used to identify the suspended UE context of a UE in RRC\_INACTIVE using 24 bits (refer to *ShortI-RNTI-Value* IE in TS 38.331 [10] and *ShortI-RNTI* IE in TS 36.331 [14]). |

*Start of ASN.1 change*

9.3.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for XnAP.

--

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

XnAP-PDU-Contents {

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

ngran-access (22) modules (3) xnap (2) version1 (1) xnap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

 //SKIP THE UNRELATED PART//

 InterfaceInstanceIndication,

 I-RNTI,

Local-NG-RAN-Node-Identifier,

 LocationInformationSNReporting,

 LocationReportingInformation,

 LowerLayerPresenceStatusChange,

 LTEUESidelinkAggregateMaximumBitRate,

 LTEV2XServicesAuthorized,

 MR-DC-ResourceCoordinationInfo,

 ServedCells-E-UTRA,

 ServedCells-NR,

 ServedCellsToUpdate-E-UTRA,

 ServedCellsToUpdate-NR,

 MAC-I,

 MaskedIMEISV,

 MDT-Configuration,

 MDTPLMNList,

 MobilityRestrictionList,

Neighbour-NG-RAN-Node-List,

 NG-RAN-Cell-Identity,

 NG-RANnodeUEXnAPID,

 NR-CGI,

 //SKIP THE UNRELATED PART//

 id-UESpecificDRX,

id-Local-NG-RAN-Node-Identifier,

id-Neighbour-NG-RAN-Node-List,

 maxnoofCellsinNG-RANnode,

 maxnoofDRBs,

 maxnoofPDUSessions,

 maxnoofQoSFlows

FROM XnAP-Constants;

*Start of next change*

-- XN SETUP REQUEST

--

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

XnSetupRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{ XnSetupRequest-IEs}},

 ...

}

XnSetupRequest-IEs XNAP-PROTOCOL-IES ::= {

 { ID id-GlobalNG-RAN-node-ID CRITICALITY reject TYPE GlobalNG-RANNode-ID PRESENCE mandatory}|

 { ID id-TAISupport-list CRITICALITY reject TYPE TAISupport-List PRESENCE mandatory}|

 { ID id-AMF-Region-Information CRITICALITY reject TYPE AMF-Region-Information PRESENCE mandatory}|

 { ID id-List-of-served-cells-NR CRITICALITY reject TYPE ServedCells-NR PRESENCE optional }|

 { ID id-List-of-served-cells-E-UTRA CRITICALITY reject TYPE ServedCells-E-UTRA PRESENCE optional }|

 { ID id-InterfaceInstanceIndication CRITICALITY reject TYPE InterfaceInstanceIndication PRESENCE optional }|

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

 { ID id-PartialListIndicator-NR CRITICALITY ignore TYPE PartialListIndicator PRESENCE optional }|

 { ID id-CellAndCapacityAssistanceInfo-NR CRITICALITY ignore TYPE CellAndCapacityAssistanceInfo-NR PRESENCE optional }|

 { ID id-PartialListIndicator-EUTRA CRITICALITY ignore TYPE PartialListIndicator PRESENCE optional }|

 { ID id-CellAndCapacityAssistanceInfo-EUTRA CRITICALITY ignore TYPE CellAndCapacityAssistanceInfo-EUTRA PRESENCE optional }|

 { ID id-Local-NG-RAN-Node-Identifier CRITICALITY ignore TYPE Local-NG-RAN-Node-Identifier PRESENCE optional }|

 { ID id-Neighbour-NG-RAN-Node-List CRITICALITY ignore TYPE Neighbour-NG-RAN-Node-List PRESENCE optional }|

 { ID id-Local-NG-RAN-Node-Identifier CRITICALITY ignore TYPE Local-NG-RAN-Node-Identifier PRESENCE optional }|

 { ID id-Neighbour-NG-RAN-Node-List CRITICALITY ignore TYPE Neighbour-NG-RAN-Node-List PRESENCE optional },

 ...

}

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

--

-- XN SETUP RESPONSE

--

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

XnSetupResponse ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{ XnSetupResponse-IEs}},

 ...

}

XnSetupResponse-IEs XNAP-PROTOCOL-IES ::= {

 { ID id-GlobalNG-RAN-node-ID CRITICALITY reject TYPE GlobalNG-RANNode-ID PRESENCE mandatory}|

 { ID id-TAISupport-list CRITICALITY reject TYPE TAISupport-List PRESENCE mandatory}|

 { ID id-List-of-served-cells-NR CRITICALITY reject TYPE ServedCells-NR PRESENCE optional }|

 { ID id-List-of-served-cells-E-UTRA CRITICALITY reject TYPE ServedCells-E-UTRA PRESENCE optional }|

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

 { ID id-AMF-Region-Information CRITICALITY reject TYPE AMF-Region-Information PRESENCE optional }|

 { ID id-InterfaceInstanceIndication CRITICALITY reject TYPE InterfaceInstanceIndication PRESENCE optional }|

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

 { ID id-PartialListIndicator-NR CRITICALITY ignore TYPE PartialListIndicator PRESENCE optional }|

 { ID id-CellAndCapacityAssistanceInfo-NR CRITICALITY ignore TYPE CellAndCapacityAssistanceInfo-NR PRESENCE optional }|

 { ID id-PartialListIndicator-EUTRA CRITICALITY ignore TYPE PartialListIndicator PRESENCE optional }|

 { ID id-CellAndCapacityAssistanceInfo-EUTRA CRITICALITY ignore TYPE CellAndCapacityAssistanceInfo-EUTRA PRESENCE optional }|

 { ID id-Local-NG-RAN-Node-Identifier CRITICALITY ignore TYPE Local-NG-RAN-Node-Identifier PRESENCE optional }|

 { ID id-Neighbour-NG-RAN-Node-List CRITICALITY ignore TYPE Neighbour-NG-RAN-Node-List PRESENCE optional },

 ...

}

*Start of next change*

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

--

-- NG-RAN NODE CONFIGURATION UPDATE

--

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

NGRANNodeConfigurationUpdate ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{ NGRANNodeConfigurationUpdate-IEs}},

 ...

}

NGRANNodeConfigurationUpdate-IEs XNAP-PROTOCOL-IES ::= {

 { ID id-TAISupport-list CRITICALITY reject TYPE TAISupport-List PRESENCE optional }|

 { ID id-ConfigurationUpdateInitiatingNodeChoice CRITICALITY ignore TYPE ConfigurationUpdateInitiatingNodeChoice PRESENCE mandatory}|

 { ID id-TNLA-To-Add-List CRITICALITY ignore TYPE TNLA-To-Add-List PRESENCE optional }|

 { ID id-TNLA-To-Remove-List CRITICALITY ignore TYPE TNLA-To-Remove-List PRESENCE optional }|

 { ID id-TNLA-To-Update-List CRITICALITY ignore TYPE TNLA-To-Update-List PRESENCE optional }|

 { ID id-GlobalNG-RAN-node-ID CRITICALITY reject TYPE GlobalNG-RANNode-ID PRESENCE optional }|

 { ID id-AMF-Region-Information-To-Add CRITICALITY reject TYPE AMF-Region-Information PRESENCE optional }|

 { ID id-AMF-Region-Information-To-Delete CRITICALITY reject TYPE AMF-Region-Information PRESENCE optional }|

 { ID id-InterfaceInstanceIndication CRITICALITY reject TYPE InterfaceInstanceIndication PRESENCE optional }|

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

 { ID id-Local-NG-RAN-Node-Identifier CRITICALITY ignore TYPE Local-NG-RAN-Node-Identifier PRESENCE optional }|

 { ID id-Neighbour-NG-RAN-Node-List CRITICALITY ignore TYPE Neighbour-NG-RAN-Node-List PRESENCE optional },

 ...

}

ConfigurationUpdateInitiatingNodeChoice ::= CHOICE {

 gNB ProtocolIE-Container { {ConfigurationUpdate-gNB} },

 ng-eNB ProtocolIE-Container { {ConfigurationUpdate-ng-eNB} },

 choice-extension ProtocolIE-Single-Container { {ServedCellsToUpdateInitiatingNodeChoice-ExtIEs} }

}

ServedCellsToUpdateInitiatingNodeChoice-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

ConfigurationUpdate-gNB XNAP-PROTOCOL-IES ::= {

 { ID id-servedCellsToUpdate-NR CRITICALITY ignore TYPE ServedCellsToUpdate-NR PRESENCE optional }|

 { ID id-cellAssistanceInfo-NR CRITICALITY ignore TYPE CellAssistanceInfo-NR PRESENCE optional }|

 { ID id-cellAssistanceInfo-EUTRA CRITICALITY ignore TYPE CellAssistanceInfo-EUTRA PRESENCE optional },

 ...

}

ConfigurationUpdate-ng-eNB XNAP-PROTOCOL-IES ::= {

 { ID id-servedCellsToUpdate-E-UTRA CRITICALITY ignore TYPE ServedCellsToUpdate-E-UTRA PRESENCE optional }|

 { ID id-cellAssistanceInfo-NR CRITICALITY ignore TYPE CellAssistanceInfo-NR PRESENCE optional }|

 { ID id-cellAssistanceInfo-EUTRA CRITICALITY ignore TYPE CellAssistanceInfo-EUTRA PRESENCE optional },

 ...

}

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

--

-- NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE

--

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

NGRANNodeConfigurationUpdateAcknowledge ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{ NGRANNodeConfigurationUpdateAcknowledge-IEs}},

 ...

}

NGRANNodeConfigurationUpdateAcknowledge-IEs XNAP-PROTOCOL-IES ::= {

 { ID id-RespondingNodeTypeConfigUpdateAck CRITICALITY ignore TYPE RespondingNodeTypeConfigUpdateAck PRESENCE mandatory}|

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

 { ID id-TNLA-Failed-To-Setup-List CRITICALITY ignore TYPE TNLA-Failed-To-Setup-List PRESENCE optional }|

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

 { ID id-InterfaceInstanceIndication CRITICALITY reject TYPE InterfaceInstanceIndication PRESENCE optional }|

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

 { ID id-Local-NG-RAN-Node-Identifier CRITICALITY ignore TYPE Local-NG-RAN-Node-Identifier PRESENCE optional }|

 { ID id-Neighbour-NG-RAN-Node-List CRITICALITY ignore TYPE Neighbour-NG-RAN-Node-List PRESENCE optional },

 ...

}

RespondingNodeTypeConfigUpdateAck ::= CHOICE {

 ng-eNB RespondingNodeTypeConfigUpdateAck-ng-eNB,

 gNB RespondingNodeTypeConfigUpdateAck-gNB,

 choice-extension ProtocolIE-Single-Container { {RespondingNodeTypeConfigUpdateAck-ExtIEs} }

}

RespondingNodeTypeConfigUpdateAck-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

RespondingNodeTypeConfigUpdateAck-ng-eNB ::= SEQUENCE {

 iE-Extension ProtocolExtensionContainer { {RespondingNodeTypeConfigUpdateAck-ng-eNB-ExtIEs} } OPTIONAL,

 ...

}

RespondingNodeTypeConfigUpdateAck-ng-eNB-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-List-of-served-cells-E-UTRA CRITICALITY ignore EXTENSION ServedCells-E-UTRA PRESENCE optional }|

 { ID id-PartialListIndicator-EUTRA CRITICALITY ignore EXTENSION PartialListIndicator PRESENCE optional }|

 { ID id-CellAndCapacityAssistanceInfo-EUTRA CRITICALITY ignore EXTENSION CellAndCapacityAssistanceInfo-EUTRA PRESENCE optional },

 ...

}

RespondingNodeTypeConfigUpdateAck-gNB ::= SEQUENCE {

 served-NR-Cells ServedCells-NR OPTIONAL,

 iE-Extension ProtocolExtensionContainer { {RespondingNodeTypeConfigUpdateAck-gNB-ExtIEs} } OPTIONAL,

 ...

}

RespondingNodeTypeConfigUpdateAck-gNB-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-PartialListIndicator-NR CRITICALITY ignore EXTENSION PartialListIndicator PRESENCE optional }|

 { ID id-CellAndCapacityAssistanceInfo-NR CRITICALITY ignore EXTENSION CellAndCapacityAssistanceInfo-NR PRESENCE optional },

 ...

}

*Start of next change*

9.3.5 Information Element definitions

-- ASN1START

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

--

-- Information Element Definitions

--

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

XnAP-IEs {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 //SKIP THE UNRELATED PART//

 id-UL-scheduling-PDCCH-CCE-usage,

 id-SFN-Offset,

 id-Local-NG-RAN-Node-Identifier,

 id-Neighbour-NG-RAN-Node-List,

 maxEARFCN,

 //SKIP THE UNRELATED PART//

 maxnoofFreqforMDT,

 maxnoofNonAnchorCarrierFreqConfig,

maxnoofNeighbour-NG-RAN-Nodes

FROM XnAP-Constants

 Criticality,

 ProcedureCode,

 ProtocolIE-ID,

 TriggeringMessage

FROM XnAP-CommonDataTypes

 ProtocolExtensionContainer{},

 ProtocolIE-Single-Container{},

 XNAP-PROTOCOL-EXTENSION,

 XNAP-PROTOCOL-IES

FROM XnAP-Containers;

*Start of next change*

-- L

Local-NG-RAN-Node-Identifier ::= CHOICE {

 full-I-RNTI-Profile-List Full-I-RNTI-Profile-List,

 short-I-RNTI-Profile-List Short-I-RNTI-Profile-List,

 choice-extension ProtocolIE-Single-Container { { Local-NG-RAN-Node-Identifier-ExtIEs} }

}

Local-NG-RAN-Node-Identifier-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

Full-I-RNTI-Profile-List ::= CHOICE {

 full-I-RNTI-Profile-0 BIT STRING (SIZE (21)),

 full-I-RNTI-Profile-1 BIT STRING (SIZE (18)),

 full-I-RNTI-Profile-2 BIT STRING (SIZE (15)),

 full-I-RNTI-Profile-3 BIT STRING (SIZE (12)),

 choice-extension ProtocolIE-Single-Container { { Full-I-RNTI-Profile-List-ExtIEs} }

}

Full-I-RNTI-Profile-List-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

Short-I-RNTI-Profile-List ::= CHOICE {

 short-I-RNTI-Profile-0 BIT STRING (SIZE (8)),

 short-I-RNTI-Profile-1 BIT STRING (SIZE (6)),

 choice-extension ProtocolIE-Single-Container { { Short-I-RNTI-Profile-List-ExtIEs} }

}

Short-I-RNTI-Profile-List-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

LastVisitedCell-Item ::= CHOICE {

 nG-RAN-Cell LastVisitedNGRANCellInformation,

 e-UTRAN-Cell LastVisitedEUTRANCellInformation,

 uTRAN-Cell LastVisitedUTRANCellInformation,

 gERAN-Cell LastVisitedGERANCellInformation,

 choice-extension ProtocolIE-Single-Container { { LastVisitedCell-Item-ExtIEs} }

}

LastVisitedCell-Item-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

*Start of next change*

-- N

//SKIP THE UNRELATED PART//

NeighbourInformation-NR-ModeTDDInfo ::= SEQUENCE {

 nr-FreqInfo NRFrequencyInfo,

 ie-Extensions ProtocolExtensionContainer { {NeighbourInformation-NR-ModeTDDInfo-ExtIEs} } OPTIONAL,

 ...

}

NeighbourInformation-NR-ModeTDDInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

Neighbour-NG-RAN-Node-List ::= SEQUENCE (SIZE(0..maxnoofNeighbour-NG-RAN-Nodes)) OF Neighbour-NG-RAN-Node-Item

Neighbour-NG-RAN-Node-Item ::= SEQUENCE {

 globalNG-RANNodeID GlobalNG-RANNode-ID,

 local-NG-RAN-Node-Identifier Local-NG-RAN-Node-Identifier,

 ...

}

NID ::= BIT STRING (SIZE(44))

*Start of next change*

### 9.3.7 Constant definitions

//SKIP THE UNRELATED PART//

maxnoofNonAnchorCarrierFreqConfig INTEGER ::= 15

maxnoofNeighbour-NG-RAN-Nodes INTEGER ::= 1024

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

--

-- IEs

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

//SKIP THE UNRELATED PART//

id-QoS-Mapping-Information ProtocolIE-ID ::= 250

id-Local-NG-RAN-Node-Identifier ProtocolIE-ID ::= 24x

id-Neighbour-NG-RAN-Node-List ProtocolIE-ID ::= 24y

END

-- ASN1STOP

*End of the change*