**3GPP TSG-RAN WG3 Meeting #114-e R3-21xxxx**

**E-meeting, 1-11 Nov 2021**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.423** | **CR** | **xxxx** | **rev** | **<Rev#>** | **Current version:** | **16.7.0** |  |
|  | | | | | | | | |
| *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:*** | CSI-RS configuration request Indicator [CSIRS-Req] | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, China telecom, Huawei, ZTE, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2021-11-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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 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:*** | | It is benificial for a node to request CSI-RS configurations for certain cells served by neighbour gNBs in Xn setup and NG-RAN node configuration update procedures. In order to avoid sending CSI-RS information to nodes that will not need this information, a requested indicator is proposed to be added in the request message. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the *Enhanced Cell Assistance Information NR* IE in Xn Setup request and NG-RAN node configuration update request messages. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Redundant CSI-RS configurations that are useless may be transferred to neighour node. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.4.1.1, 8.4.2.1, 9.1.3.1, 9.1.3.4, 9.2.2.x, ASN.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS36.423 CR xxx | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>Changes Start>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

### 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



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 *Enhanced Cell Assistance Information NR* IE is included in the XN SETUP REQUEST message and if the NG-RAN node2 is a gNB, the NG-RAN node2 shall, if supported, include the *Additional Measurement Timing Configuration List* IE for the NR cells indicated in the *CSI-RS Configuration Request Information* IE in the XN SETUP RESPONSE message.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>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



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.

**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.

If the *Enhanced Cell Assistance Information NR* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message and if the NG-RAN node2 is a gNB, the NG-RAN node2 shall, if supported, include the *Additional Measurement Timing Configuration List* IE for the NR cells indicated in the *CSI-RS Configuration Request Information* IE in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>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 |  | – |  |
| >Enhanced Cell Assistance Information NR | O |  | Served Cell Specific Info Request  9.2.2.x |  | YES | ignore |
| **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 Indicator  9.2.2.46 | 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 Indicator  9.2.2.46 | 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 |

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>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 |
| >>Enhanced Cell Assistance Information NR | | O |  | Served Cell Specific Info Request  9.2.2.x |  | 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 Information  9.2.3.31 | 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 Information  9.2.3.31 | 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 Information  9.2.3.31 | 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 |

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>Next Change>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

#### 9.2.2.x Served Cell Specific Info Request

The *Served Cell Specific Info Request* IE is used by the NG-RAN node to request specific information about NR cells.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| **List of Requested NR Cells** |  | *1 .. < maxnoofCellsinNG-RAN node>* |  | List of NR cells. |
| >NR CGI | M |  | 9.2.2.7 | NR cell for which specific served NR cell information is requested. |
| Additional Measurement Timing Configuration List Request Indicator | O |  | ENUMERATED (AdditionalMTCListRequested, …) | Included when the NG-RAN node requests the *Additional Measurement Timing Configuration List* IE to be included in the *Served Cell Information NR* IE for the requested cells. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCellsinNG-RAN node | Maximum no. cells that can be served by a NG-RAN node. Value is 16384. |

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>Next Change>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

### 9.3.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for XnAP.

--

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

<<< skip unchanged ASN.1 >>>

RACHReportInformation,

IABNodeIndication,

SNTriggered,

SCGIndicator,

UESpecificDRX,

ServedCellSpecificInfoReq-NR

FROM XnAP-IEs

<<< skip unchanged ASN.1 >>>

id-NG-RANnode1MobilityParameters,

id-NG-RANnode2ProposedMobilityParameters,

id-MobilityParametersModificationRange,

id-RACHReportInformation,

id-IABNodeIndication,

id-UERadioCapabilityID,

id-SCGIndicator,

id-UESpecificDRX,

id-PDUSessionExpectedUEActivityBehaviour,

id-ServedCellSpecificInfoReq-NR

<<< skip unchanged ASN.1 >>>

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

--

-- 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 },

...

}

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

--

-- 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 },

...

}

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

--

-- XN SETUP FAILURE

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

XnSetupFailure ::= SEQUENCE {

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

...

}

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

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

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

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

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

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

...

}

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

--

-- 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 },

...

}

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 }|

{ ID id-servedCellSpecificInfoReq-NR CRITICALITY ignore TYPE ServedCellSpecificInfoReq-NR 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 },

...

}

### 9.3.5 Information Element definitions

<<< skip unchanged ASN.1 >>>

AdditionalMTCListRequestIndicator ::= ENUMERATED {AdditionalMTCListRequested, ...}

<<< skip unchanged ASN.1 >>>

ServedCells-NR ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF ServedCells-NR-Item

ServedCells-NR-Item ::= SEQUENCE {

served-cell-info-NR ServedCellInformation-NR,

neighbour-info-NR NeighbourInformation-NR OPTIONAL,

neighbour-info-E-UTRA NeighbourInformation-E-UTRA OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {ServedCells-NR-Item-ExtIEs} } OPTIONAL,

...

}

ServedCells-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

{ ID id-servedCellSpecificInfoReq-NR CRITICALITY ignore TYPE ServedCellSpecificInfoReq-NR PRESENCE optional },

...

}

ServedCells-ToModify-NR ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF ServedCells-ToModify-NR-Item

ServedCells-ToModify-NR-Item ::= SEQUENCE {

old-NR-CGI NR-CGI,

served-cell-info-NR ServedCellInformation-NR,

neighbour-info-NR NeighbourInformation-NR OPTIONAL,

neighbour-info-E-UTRA NeighbourInformation-E-UTRA OPTIONAL,

deactivation-indication ENUMERATED {deactivated, ...} OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {Served-cells-ToModify-NR-Item-ExtIEs} } OPTIONAL,

...

}

Served-cells-ToModify-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

ServedCellSpecificInfoReq-NR ::= SEQUENCE {

requestedNRCells-List SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF NR-CGI,

additionalMTCListRequestIndicator AdditionalMTCListRequestIndicator OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { ServedCellSpecificInfoReq-NR-ExtIEs} } OPTIONAL,

...

}

CellAssistanceInfo-NR-ExtIEs XNAP-PROTOCOL-IES ::= {

...

}

<<< skip unchanged ASN.1 >>>

### 9.3.7 Constant definitions

-- ASN1START

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

--

-- Constant definitions

--

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

<<< skip unchanged ASN.1 >>>

ProtocolIE-ID ::= 247

id-UESpecificDRX ProtocolIE-ID ::= 248

id-PDUSessionExpectedUEActivityBehaviour ProtocolIE-ID ::= 249

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

ID id-servedCellSpecificInfoReq-NR ProtocolIE-ID ::= xxx

-- ASN1STOP

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>Changes End>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>