**3GPP TSG-RAN WG3 #108-e R3-20xxxx**

1st – 12th June 2020

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.423** | **CR** | **1405** | **rev** | **10** | **Current version:** | **16.1.0** |  |
|  |
| *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:***  | MDT Configuration support for XnAP |
|  |  |
| ***Source to WG:*** | Ericsson, CMCC, Huawei, ZTE, Nokia, Nokia Shanghai Bell，CATT, Samsung, Ericsson, Qualcomm Incorporated, LG Electronics, NTT DoCoMo |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_SON\_MDT-Core |  | ***Date:*** | 2019-06-17 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | Support of MDT Configuration is currently lacking in TS 38.423. Need to support streaming-based MDT as agreed by SA5. |
|  |  |
| ***Summary of change:*** | Add *MDT Configuration* IE in HANDOVER REQUEST and RETRIEVE UE CONTEXT RESPONSE messages. Add new Start Trace / Deactivate Trace messages. Add URI for streaming-based MDT.Impact assessment towards the previous version of the specification (same release):This CR has an isolated impact on Trace from functional and procedural points of view. |
|  |  |
| ***Consequences if not approved:*** | Feature not supported. |
|  |  |
| ***Clauses affected:*** | 2, 8.2.12, 8.2.4.2, 8.3.14, 9.1.1.1, 9.1.1.9, 9.2.x (new), 9.2.3.x1 (new), 9.2.3.x2 (new), 9.2.3.x3 (new), 9.2.3.x4 (new), 9.2.3.x5 (new), 9.2.3.x6 (new), 9.2.3.x7 (new), 9.2.3.x8 (new), 9.2.3.x9 (new), 9.3.3, 9.3.4, 9.3.5, 9.3.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev1, 2, 3: addition of TPs agreed at RAN3-105bisRev4: addition of TPs agreed at RAN3-106Rev5: ASN.1 correctionsRev6: Addition of TPs in R3-201399 and R3-201400Rev7: Rebased on TS 38.423 16.1.0Rev8, 9: Resubmission to RAN3-108-e, no changesRev10: Addition of changes from RAN3-108e |

<<<<<<<<<<<<<<<<<<<< 1st Change >>>>>>>>>>>>>>>>>>>>

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 38.401: "NG-RAN; Architecture Description".

[3] 3GPP TS 38.420: "NG-RAN; Xn General Aspects and Principles".

[4] 3GPP TS 38.422: "NG-RAN; Xn Signalling Transport".

[5] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP) ".

[6] 3GPP TS 25.921: "Guidelines and principles for protocol description and error handling".

[7] 3GPP TS 23.501: "System Architecture for the 5G System".

[8] 3GPP TS 37.340: "Evolved Universal Terrestrial Radio Access (E-UTRA) and NR; Multi-connectivity; Stage 2".

[9] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[10] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) Protocol specification".

[11] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[12] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".

[13] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[14] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

[15] ITU-T Recommendation X.691 (2002-07): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER) ".

[16] ITU-T Recommendation X.680 (2002-07): "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[17] ITU-T Recommendation X.681 (2002-07): "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification".

[18] 3GPP TS 29.281: "General Packet Radio Service (GPRS); Tunnelling Protocol User Plane (GTPv1-U)".

[19] 3GPP TS 38.424: "NG-RAN; Xn data transport".

[20] 3GPP TS 38.414: "NG-RAN; NG data transport".

[21] 3GPP TS 38.412: "NG-RAN; NG Signalling Transport".

[22] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[23] 3GPP TS 32.422: "Trace control and configuration management".

[24] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[25] 3GPP TS 36.104: "Base Station (BS) radio transmission and reception ".

[26] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation".

[27] 3GPP TS 36.101: "User Equipment (UE) radio transmission and reception".

[28] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[29] 3GPP TS 33.401: "3GPP System Architecture Evolution (SAE); Security architecture".

[30] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[31] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[32] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[33] 3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[34] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode".

[35] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification".

[36] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".

[37] IETF RFC 5905: "Network Time Protocol Version 4: Protocol and Algorithms Specification".

[y] 3GPP TS 37.320: " Radio measurement collection for Minimization of Drive Tests (MDT),"

[y1] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

<<<<<<<<<<<<<<<<<<<< End of 1st Change >>>>>>>>>>>>>>>>>>>>

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<<<<<<<<<<<<<<<<<<<< 2nd Change >>>>>>>>>>>>>>>>>>>>

8.2.1.2 Successful Operation

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**Figure 8.2.1.2-1: Handover Preparation, successful operation**

The source NG-RAN node initiates the procedure by sending the HANDOVER REQUEST message to the target NG-RAN node. When the source NG-RAN node sends the HANDOVER REQUEST message, it shall start the timer TXnRELOCprep.

For each *E-RAB ID* IE included in the *QoS Flow To Be Setup List* IE in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the content of the IE in the UE context and use it for subsequent inter-system handover.

If the *Masked IMEISV* IE is contained in the HANDOVER REQUEST message the target NG-RAN node shall, if supported, use it to determine the characteristics of the UE for subsequent handling.

At reception of the HANDOVER REQUEST message the target NG-RAN node shall prepare the configuration of the AS security relation between the UE and the target NG-RAN node by using the information in the *UE Security Capabilities* IE and the *AS Security Information* IE in the *UE Context Information* IE, as specified in TS 33.501 [28].

Upon reception of the *PDU Session Resource Setup List* IE, contained in the HANDOVER REQUEST message, the target NG-RAN node shall behave the same as specified in TS 38.413 [5] for the PDU Session Resource Setup procedure. The target NG-RAN node shall report in the HANDOVER REQUEST ACKNOWLEDGE message the successful establishment of the result for all the requested PDU session resources. When the target NG-RAN node reports the unsuccessful establishment of a PDU session resource, the cause value should be precise enough to enable the source NG-RAN node to know the reason for the unsuccessful establishment.

For each PDU session if the *PDU Session Aggregate Maximum Bit Rate* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall store the received PDU Session Aggregate Maximum Bit Rate in the UE context and use it when enforcing traffic policing for Non-GBR QoS flows for the concerned UE as specified in TS 23.501 [7].

For each QoS flow for which the source NG-RAN node proposes to perform forwarding of downlink data, the source NG-RAN node shall include the *DL Forwarding* IE set to "DL forwarding proposed" within the *Data Forwarding and* *Offloading Info from source NG-RAN node* IE in the *PDU Session Resources To Be Setup List* IE in the HANDOVER REQUEST message. For each PDU session that the target NG-RAN node decides to admit the data forwarding for at least one QoS flow, the target NG-RAN node includes the *PDU Session level DL data forwarding GTP-U Tunnel Endpoint* IE within the *Data Forwarding Info from target NG-RAN node* IE in the *PDU Session Resource Admitted Info* IE contained in the *PDU Session Resources Admitted List* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

For each QoS flow for which the source NG-RAN node has not yet received the SDAP end marker packet if QoS flow re-mapping happened before handover, the source NG-RAN node shall include the *UL Forwarding* *Proposal* IE within the *Data Forwarding and Offloading Info from source NG-RAN node* IE in the HANDOVER REQUEST message, and if the target NG-RAN node decides to admit uplink data forwarding for at least one QoS flow, the target NG-RAN node may include the *PDU Session Level UL Data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE in the *PDU Session Resources Admitted Item* IE contained in the *PDU Session Resources Admitted List* IE in the HANDOVER REQUEST ACKNOWLEDGE message to indicate that it accepts the uplink data forwarding.

For each PDU session resource successfully setup at the target NG-RAN, the target NG-RAN node may allocate resources for additional Xn-U PDU session resource GTP-U tunnels, indicated in the *Secondary Data Forwarding Info from target NG-RAN node List* IE.

For each DRB for which the source NG-RAN node proposes to perform forwarding of downlink data, the source NG-RAN node shall include the *DRB ID* IE and the mapped *QoS Flows List* IE within the *Source DRB to QoS Flow Mapping List* IE contained in the *PDU Session Resources To Be Setup List* IE in the HANDOVER REQUEST message. The source NG-RAN node may include the *QoS Flow Mapping Indication* IE in the *Source DRB to QoS Flow Mapping List* IE to indicate that only the uplink or downlink QoS flow is mapped to the DRB. If the target NG-RAN node decides to use the same DRB configuration and to map the same QoS flows as the source NG-RAN node, the target NG-RAN node includes the *DL Forwarding GTP Tunnel Endpoint* IE within the *Data Forwarding Response DRB List* IE in the HANDOVER REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this DRB.

If the HANDOVER REQUEST ACKNOWLEDGE message contains the *UL Forwarding GTP Tunnel Endpoint* IE for a given DRB in the *Data Forwarding Response DRB List* IE within *Data Forwarding Info from target NG-RAN node* IE in the *PDU Session Resources Admitted List* IE and the source NG-RAN node accepts the data forwarding proposed by the target NG-RAN node, the source NG-RAN node shall perform forwarding of uplink data for the DRB.

If the HANDOVER REQUEST includes PDU session resources for PDU sessions associated to S-NSSAIs not supported by target NG-RAN, the target NG-RAN shall reject such PDU session resources. In this case, and if at least one *PDU Session Resource To Be Setup Item* IE is admitted, the target NG-RAN shall send the HANDOVER REQUEST ACKNOWLEDGE message including the *PDU Session Resources Not Admitted List* IE listing corresponding PDU sessions rejected at the target NG-RAN.

If the *Mobility Restriction List* IE is

- contained in the HANDOVER REQUEST message, the target NG-RAN node shall

- store the information received in the *Mobility Restriction List* IE in the UE context;

- use this information to determine a target for the UE during subsequent mobility action for which the NG-RAN node provides information about the target of the mobility action towards the UE, except when one of the PDU sessions has a particular ARP value (TS 23.501 [7]) in which case the information shall not apply;

- use this information to select a proper SCG during dual connectivity operation.

- use this information to select proper RNA(s) for the UE when moving the UE to RRC\_INACTIVE.

- not contained in the HANDOVER REQUEST message, the target NG-RAN node shall

- consider that no roaming and no access restriction apply to the UE.

If the *Trace Activation* IE is included in the HANDOVER REQUEST message the target NG-RAN node shall, if supported, initiate the requested trace function as specified in TS 32.422 [23].

If the *Index to RAT/Frequency Selection Priority* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall store this information and use it as defined in TS 23.501 [7].

If the *UE Context Reference at the S-NG-RAN* IE is contained in the HANDOVER REQUEST message the target NG-RAN node may use it as specified in TS 37.340 [8]. In this case, the source NG-RAN node may expect the target NG-RAN node to include the *UE Context Kept Indicator* IE set to "True" in the HANDOVER REQUEST ACKNOWLEDGE message, which shall use this information as specified in TS 37.340 [8].

If the *UE Context Kept Indicator* IE set to "True" is included, then, if the *DRBs transferred to MN* IE is included in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, include the uplink/downlink PDCP SN and HFN status received from the S-NG-RAN node in the SN Status Transfer procedure towards the target NG-RAN node, as specified in TS 37.340 [8].

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource To Be Setup List* IE and the *Common Network Instance* IE is not present, the target NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each PDU session, if the *Common* *Network Instance* IE is included in the *PDU Session Resource To Be Setup List* IE, the target NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Be Setup List* IE and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "required", the target NG-RAN node shall perform user plane integrity protection or ciphering, respectively. If the NG-RAN node is not able to perform the user plane integrity protection or ciphering, it shall reject the setup of the PDU Session Resources with an appropriate cause value.

If the NG-RAN node is an ng-eNB, it shall reject all PDU sessions for which the *Integrity Protection Indication* IE is set to "required".

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Be Setup List* IE and the *Integrity Protection Indication* IE or the *Confidentiality Protection Indication* IE is set to "preferred", the target NG-RAN node should, if supported, perform user plane integrity protection or ciphering, respectively and shall notify the SMF whether it succeeded the user plane integrity protection or ciphering or not for the concerned security policy.

For each PDU session for which the *Maximum Integrity Protected Data Rate* IE is included in the *Security Indication* IE in the *PDU Session Resources To Be Setup List* IE, the NG-RAN node shall store the respective information and, if integrity protection is to be performed for the PDU session, it shall enforce the traffic corresponding to the received *Maximum Integrity Protected Data Rate* IE, for the concerned PDU session and concerned UE, as specified in TS 23.501 [7].

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resource To Be Setup List* IE and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "not needed", the target NG-RAN node shall not perform user plane integrity protection or ciphering, respectively, for the concerned PDU session.

For each PDU session, if the *Additional UL NG-U UP TNL Information List* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node may forward the UP transport layer information to the target S-NG-RAN node as the uplink termination point for the user plane data for this PDU session split in different tunnel.

If the *Location Reporting Information* IE is included in the HANDOVER REQUEST message, then the target NG-RAN node should initiate the requested location reporting functionality as defined in TS 38.413 [5].

Upon reception of *UE History Information* IE in the HANDOVER REQUEST message, the target NG-RAN node shall collect the information defined as mandatory in the *UE History Information* IE and shall, if supported, collect the information defined as optional in the *UE History Information* IE, for as long as the UE stays in one of its cells, and store the collected information to be used for future handover preparations.

If the *Trace Activation* IE is included in the HANDOVER REQUEST message which includes the *MDT Activation* IE set to “Immediate MDT and Trace”, then the target NG-RAN node shall if supported, initiate the requested trace session and MDT session as described in TS 32.422 [23].

If the *Trace Activation* IE is included in the HANDOVER REQUEST message which includes the *MDT Activation* IE set to “Immediate MDT Only” or “Logged MDT only”, the target NG-RAN node shallif supported, initiate the requested MDT session as described in TS 32.422 [23] and the target NG-RAN node shall ignore *Interfaces To Trace* IE, and *Trace Depth* IE.

If the *Trace Activation* IE includes the *MDT Location Information* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, store this information and take it into account in the requested MDT session.

If the *Trace Activation* IE is included in the HANDOVER REQUEST message which includes the *MDT Activation* IE set to “Immediate MDT Only” or “Logged MDT only”, and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the target NG-RAN node may use it to propagate the MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [y].

if the *Trace Activation* IE includes the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, take it into account for MDT Configuration as described in TS 37.320 [x].

If the *Trace Activation* IE includes the *MDT Configuration* IE and if the NG-RAN Node is a gNB at least *the MDT Configuration-NR* IE shall be present, while if the NG-RAN Node is an ng-eNB at least the *MDT Configuration-EUTRA* IE shall be present.

If the *Management Based MDT PLMN List* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the received information in the UE context, and use this information to allow subsequent selection of the UE for management based MDT defined in TS 32.422 [23].

The source NG-RAN node shall, if supported and available in the UE context, include the *Management Based MDT PLMN List* IE in the HANDOVER REQUEST message, except if the source NG-RAN node selects a serving PLMN in the target NG-RAN node which is not included in the Management Based MDT PLMN List.

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<<<<<<<<<<<<<<<<<<<< 3rd Change >>>>>>>>>>>>>>>>>>>>

#### 8.2.4.2 Successful Operation



Figure 8.2.4.2-1: Retrieve UE Context, successful operation

The new NG-RAN node initiates the procedure by sending the RETRIEVE UE CONTEXT REQUEST message to the old NG-RAN node.

If the old NG-RAN node is able to identify the UE context by means of the UE Context ID, and to successfully verify the UE by means of the integrity protection contained in the RETRIEVE UE CONTEXT REQUEST message, and decides to provide the UE context to the new NG-RAN node, it shall respond to the new NG-RAN node with the RETRIEVE UE CONTEXT RESPONSE message.

If the *Index to RAT/Frequency Selection Priority* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall store this information and use it as defined in TS 23.501 [7].

If the *Location Reporting Information* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, then the new NG-RAN node should initiate the requested location reporting functionality as defined in TS 38.413 [5].

If the *Trace Activation* IE is included in the RETRIEVE UE CONTEXT RESPONSE message which includes the *MDT Activation* IE set to “Immediate MDT and Trace”, then the target NG-RAN node shall if supported, initiate the requested trace session and MDT session as described in TS 32.422 [23].

If the *Trace Activation* IE is included in the RETRIEVE UE CONTEXT RESPONSE message which includes the *MDT Activation* IE set to “Immediate MDT Only” or “Logged MDT only”, the target NG-RAN node shall, if supported, initiate the requested MDT session as described in TS 32.422 [23] and the target NG-RAN node shall ignore *Interfaces To Trace* IE, and *Trace Depth* IE.

If the *Trace Activation* IE includes the *MDT Location Information* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, store this information and take it into account in the requested MDT session.

If the *Trace Activation* IE is included in the RETRIEVE UE CONTEXT RESPONSE message which includes the *MDT Activation* IE set to “Immediate MDT Only” or “Logged MDT only”, and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the target NG-RAN node may use it to propagate the MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [y].

if the *Trace Activation* IE includes the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, take it into account for MDT Configuration as described in TS 37.320 [x].

If the *Trace Activation* IE includes the *MDT Configuration* IE and if the NG-RAN Node is a gNB at least *the MDT Configuration-NR* IE shall be present, while if the NG-RAN Node is an ng-eNB at least the *MDT Configuration-EUTRA* IE shall be present.

 <<<<<<<<<<<<<<<<<<<< End of 3rd Change >>>>>>>>>>>>>>>>>>>>

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<<<<<<<<<<<<<<<<<<<< 4th Change >>>>>>>>>>>>>>>>>>>>

### 8.3.14 Trace Start

#### 8.3.14.1 General

The purpose of the Trace Start procedure is to allow the M-NG-RAN node to request the S-NG-RAN node to initiate a trace session for a UE. The procedure uses UE-associated signalling.

#### 8.3.14.2 Successful Operation



Figure 8.3.14.2-1: Trace Start, successful operation

The Trace Start procedure is initiated by the M-NG-RAN sending the TRACE START message to the S-NG-RAN for that specific UE. Upon reception of the TRACE START message, the S-NG-RAN shall initiate the requested trace session as described in TS 32.422 [23].

If the *Trace Activation* IE includes the *MDT Activation* IE set to “Immediate MDT and Trace”, the SN gNB shall if supported, initiate the requested trace session and MDT session as described in TS 32.422[23].

If the *Trace Activation* IE includes the *MDT Activation* IE set to “Immediate MDT Only”or “Logged MDT only”, the SN gNB shall, if supported, initiate the requested MDT session as described in TS 32.422[x] and the SN gNB shall ignore *Interfaces To Trace* IE and *Trace Depth* IE.

If the *Trace Activation* IE includes the *MDT Location Information* IE, within the *MDT Configuration* IE, the SN gNB shall, if supported, store this information and take it into account in the requested MDT session.

If the *Trace Activation* IE includes the *MDT Activation* IE set to “Immediate MDT Only” or “Logged MDT only”, and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the SN gNB may use it to propagate the MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the SN gNB shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the SN gNB node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [y].

If the *Trace Activation* IE includes the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, take it into account for MDT Configuration as described in TS 37.320 [x].

If the *MDT Configuration* IE is included in the *Trace Activation* IE, if the NG-RAN Node is a gNB at least *the MDT Configuration-NR* IE shall be present, while if the NG-RAN Node is an ng-eNB at least the *MDT Configuration-EUTRA* IE shall be present.

#### 8.3.14.3 Abnormal Conditions

Void.

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<<<<<<<<<<<<<<<<<<<< 5th Change >>>>>>>>>>>>>>>>>>>>

### 9.1.1.1 HANDOVER REQUEST

This message is sent by the source NG-RAN node to the target NG-RAN node to request the preparation of resources for a handover.

Direction: source NG-RAN node → target NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| Source NG-RAN node UE XnAP ID reference | M |  | NG-RAN node UE XnAP ID9.2.3.16 | Allocated at the source NG-RAN node | YES | reject |
| Cause | M |  | 9.2.3.2 |  | YES | reject |
| Target Cell Global ID | M |  | 9.2.3.25 | Includes either an E-UTRA CGI or an NR CGI | YES | reject |
| GUAMI | M |  | 9.2.3.24 |  | YES | reject |
| **UE Context Information** |  | *1* |  |  | YES | reject |
| >NG-C UE associated Signalling reference | M |  | AMF UE NGAP ID9.2.3.26 | Allocated at the AMF on the source NG-C connection. | – |  |
| >Signalling TNL association address at source NG-C side | M |  | CP Transport Layer Information9.2.3.31 | This IE indicates the AMF’s IP address of the SCTP association used at the source NG-C interface instance.Note: If no UE TNLA binding exists at the source NG-RAN node, the source NG-RAN node indicates the TNL association address it would have selected if it would have had to create a UE TNLA binding. | – |  |
| >UE Security Capabilities | M |  | 9.2.3.49 |  | – |  |
| >AS Security Information | M |  | 9.2.3.50 |  | – |  |
| >Index to RAT/Frequency Selection Priority | O |  | 9.2.3.23 |  | – |  |
| >UE Aggregate Maximum Bit Rate | M |  | 9.2.3.17 |  | – |  |
| >PDU Session Resources To Be Setup List |  | *1* | 9.2.1.1 | Similar to NG-C signalling, containing UL tunnel information per PDU Session Resource;and in addition, the source side QoS flow ⇔ DRB mapping | – |  |
| >RRC Context | M |  | OCTET STRING | Either includes the *HandoverPreparationInformation* message as defined in subclause 10.2.2. of TS 36.331 [14], if the target NG-RAN node is an ng-eNB,or the *HandoverPreparationInformation* message as defined in subclause 11.2.2 of TS 38.331 [10], if the target NG-RAN node is a gNB. | – |  |
| >Location Reporting Information | O |  | 9.2.3.47 | Includes the necessary parameters for location reporting. | – |  |
| >Mobility Restriction List | O |  | 9.2.3.53 |  | – |  |
| **>ManagementBasedMDT PLMN List** | O |  | MDT PLMN List9.2.3.x10 |  | YES | ignore |
| Trace Activation | O |  | 9.2.3.55 |  | YES | ignore |
| Masked IMEISV | O |  | 9.2.3.32 |  | YES | ignore |
| UE History Information | M |  | 9.2.3.64 |  | YES | ignore |
| **UE Context Reference at the S-NG-RAN node** | O |  |  |  | YES | ignore |
| >Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – |  |
| >S-NG-RAN node UE XnAP ID | M |  | NG-RAN node UE XnAP ID9.2.3.16 |  | – |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMDTPLMNs | PLMNs in the Management Based MDT PLMN list. Value is 16. |

<<<<<<<<<<<<<<<<<<<< End of 5th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 6th Change >>>>>>>>>>>>>>>>>>>>

### 9.1.1.9 RETRIEVE UE CONTEXT RESPONSE

This message is sent by the old NG-RAN node to transfer the UE context to the new NG-RAN node.

Direction: old NG-RAN node → new NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| New NG-RAN node UE XnAP ID reference | M |  | NG-RAN node UE XnAP ID9.2.3.16 | Allocated at the new NG-RAN node | YES | ignore |
| Old NG-RAN node UE XnAP ID reference | M |  | NG-RAN node UE XnAP ID9.2.3.16 | Allocated at the old NG-RAN node | YES | ignore |
| GUAMI | M |  | 9.2.3.24 |  | YES | reject |
| UE Context Information Retrieve UE Context Response | M |  | 9.2.1.13 |  | YES | reject |
| Trace Activation | O |  | 9.2.3.55 |  | YES | ignore |
| Masked IMEISV | O |  | 9.2.3.32 |  | YES | ignore |
| Location Reporting Information | O |  | 9.2.3.47 | Includes the necessary parameters for location reporting. | YES | ignore |
| Criticality Diagnostics | O |  | 9.2.3.3 |  | YES | ignore |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ManagementBasedMDT PLMN List** | O |  | MDT PLMN List9.2.3.x10 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMDTPLMNs | PLMNs in the Management Based MDT PLMN list. Value is 16. |

<<<<<<<<<<<<<<<<<<<< End of 6th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 7th Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.3.55 Trace Activation

This IE defines parameters related to a trace activation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| NG-RAN Trace ID | M |  | 9.2.3.97 |  |
| Interfaces To Trace | M |  | BIT STRING (SIZE(8)) | Each position in the bitmap represents an NG-RAN node interface:first bit = NG-C,second bit = Xn-C,third bit = Uu,fourth bit = F1-C,fifth bit = E1:other bits reserved for future use.Value ‘1’ indicates ‘should be traced’.Value ‘0’ indicates ‘should not be traced’. |
| Trace Depth | M |  | ENUMERATED (minimum, medium, maximum, MinimumWithoutVendorSpecificExtension,MediumWithoutVendorSpecificExtension,MaximumWithoutVendorSpecificExtension, …) | Defined in TS 32.422 [23]. |
| Trace Collection Entity IP Address | M |  | Transport Layer Address9.2.3.29 | For File based Reporting.Defined in TS 32.422 [23]Should be ignored if URI is present |
| Trace Collection Entity URI | O |  | URI 9.2.3.X | For Streaming based Reporting.Defined in TS 32.422 [11]Replaces Trace Collection Entity IP Address if present |
| MDT Configuration | O |  | 9.2.3.x1 | This IE defines the MDT configuration parameters. |

<<<<<<<<<<<<<<<<<<<< End of 7th Change >>>>>>>>>>>>>>>>>>>>

**-- TEXT OMITTED –**

<<<<<<<<<<<<<<<<<<<< 8th Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.3.X URI

This IE is defined to contain a URI address.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| URI | M |  | VisibleString | String representing URI (Uniform Resource Identifier) |

### 9.2.3.x1 MDT Configuration

The IE defines the MDT configuration parameters.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| MDT Configuration-NR | O |  | 9.2.3.x2 |  | - | - |
| MDT Configuration-EUTRA | O |  | 9.2.3.x3 |  | - | - |

### 9.2.3.x2 MDT Configuration-NR

The IE defines the MDT configuration parameters of NR.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| MDT Activation | M |  | ENUMERATED(Immediate MDT only, Logged MDT only, Immediate MDT and Trace,…) |  | - | - |
| CHOICE *Area Scope of MDT* | O |  |  |  | - | - |
| >*Cell based* |  |  |  |  |  | - |
| >>**Cell ID List for MDT** |  | *1 .. <maxnoofCellIDforMDT>* |  |  |  | - |
| >>> NR CGI | M |  | 9.2.2.7 |  | - | - |
| >*TA based* |  |  |  |  |  | - |
| >>**TA List for MDT** |  | *1 .. <maxnoofTAforMDT>* |  |  |  | - |
| >>>TAC | M |  | OCTET STRING (SIZE (3)) | The TAI is derived using the current serving PLMN. | - | - |
| >*TAI based* |  |  |  |  | - | - |
| >>**TAI List for MDT** |  | *1 .. <maxnoofTAforMDT>* |  |  | - | - |
| >>>TAI | M |  | 9.2.3.20 |  | - | - |
| CHOICE *MDT Mode* | M |  |  |  | - | - |
| >*Immediate MDT* |  |  |  |  |  | - |
| >>Measurements to Activate | M |  | BITSTRING(SIZE(8)) | Each position in the bitmap indicates a MDT measurement, as defined in TS 37.320 [y]. First Bit = M1,Second Bit= M2,Fourth Bit = M4,Fifth Bit = M5,Sixth Bit = logging of M1 from event triggered measurement reports according to existing RRM configuration,Seventh Bit = M6,Eighth Bit = M7.Value “1” indicates “activate” and value “0” indicates “do not activate”.This version of the specification does not use bits 3. | - | - |
| >>M1 Configuration | C-ifM1 |  | 9.3.3.y1 |  |  |  |
| >>M4 Configuration | C-ifM4 |  | 9.2.3.x4 |  | YES | ignore |
| >>M5 Configuration | C-ifM5 |  | 9.2.3.x5 |  | YES | ignore |
| >>MDT Location Information | O |  | BITSTRING(SIZE(8)) | Each position in the bitmap represents requested location information as defined in TS 37.320 [y].First Bit = GNSSOther bits are reserved for future use and are ignored if received.Value “1” indicates “activate” and value “0” indicates “do not activate”.The eNB shall ignore the first bit unless the *Measurements to Activate* IE has the first bit or the sixth bit set to “1”. | YES | ignore |
| >>M6 Configuration | C-ifM6 |  | 9.2.3.x6 |  | YES | ignore |
| >>M7 Configuration | C-ifM7 |  | 9.2.3.x7 |  | YES | ignore |
| >> Bluetooth Measurement Configuration | O |  | 9.2.3.11 |  | YES | Ignore |
| >>WLAN Measurement Configuration | O |  | 9.2.3.12 |  | YES | Ignore |
| >>Sensor Measurement Configuration | O |  | 9.3.1.x13  |  |  |  |
| >*Logged MDT* |  |  |  |  |  | - |
| >>Logging interval | M |  | ENUMERATED (ms320, ms640, ms1280, ms2560, ms5120, ms10240, ms20480, ms30720, ms40960 and ms61440, infinity) | This IE is defined in TS 38.331 [10]. The value “infinity” represents one shot logging, i.e., only one log per event in the logged MDT report. | - | - |
| >>Logging duration | M |  | ENUMERATED (10, 20, 40, 60, 90, 120) | This IE is defined in TS 38.331 [10]. Unit: [minute]. | - | - |
| >>CHOICE Report Type | M |  |  |  |  |  |
| >>>Periodical |  |  |  |  |  |  |
| >>>Event Triggered |  |  |  |  |  |  |
| >>>> Logged Event Trigger Config | M |  | 9.2.3.x14 |  |  |  |
| >>Bluetooth Measurement Configuration | O |  | 9.2.3.x11 |  | YES | Ignore |
| >>WLAN Measurement Configuration | O |  | 9.2.3.x12 |  | YES | Ignore |
| >>Sensor Measurement Configuration | O |  | 9.2.3.x13 |  | YES | Ignore |
| >> Area Scope of Neighbour Cells | O |  | 9.3.1.xxx1 |  | YES | Ignore |
| Signalling based MDT PLMN List | O |  | MDT PLMN List9.2.3.x10 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCellIDforMDT | Maximum no. of Cell ID subject for MDT scope. Value is 32. |
| maxnoofTAforMDT | Maximum no. of TA subject for MDT scope. Value is 8. |

|  |  |
| --- | --- |
| Condition | Explanation |
| C-ifM1 | This IE shall be present if the *Measurements to Activate* IE has the first bit set to “1”. |
|  |  |
| C-ifM4 | This IE shall be present if the *Measurements to Activate* IE has the fourth bit set to “1”. |
| C-ifM5 | This IE shall be present if the *Measurements to Activate* IE has the fifth bit set to “1”. |
| C-ifM6 | This IE shall be present if the Measurements to Activate IE has the seventh bit set to “1”. |
| C-ifM7 | This IE shall be present if the Measurements to Activate IE has the eighth bit set to “1”. |

### 9.2.3.x3 MDT Configuration-EUTRA

The IE defines the MDT configuration parameters of EUTRA.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| MDT Activation | M |  | ENUMERATED(Immediate MDT only, Logged MDT only, Immediate MDT and Trace,…) |  | - | - |
| CHOICE *Area Scope of MDT* | O |  |  |  | - | - |
| >*Cell based* |  |  |  |  |  | - |
| >>**Cell ID List for MDT** |  | *1 .. <maxnoofCellIDforMDT>* |  |  |  | - |
| >>> NR CGI | M |  | 9.2.2.7 |  | - | - |
| >*TA based* |  |  |  |  |  | - |
| >>**TA List for MDT** |  | *1 .. <maxnoofTAforMDT>* |  |  |  | - |
| >>>TAC | M |  | OCTET STRING (SIZE (3)) | The TAI is derived using the current serving PLMN. | - | - |
| >*TAI based* |  |  |  |  | - | - |
| >>**TAI List for MDT** |  | *1 .. <maxnoofTAforMDT>* |  |  | - | - |
| >>>TAI | M |  | 9.2.3.20 |  | - | - |
| *MDT Mode* | M |  | OCTET STRING | *MDTMode* IE defined in TS 36.413 [16]. | - | - |
| Signalling based MDT PLMN List | O |  | MDT PLMN List9.2.3.x10 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCellIDforMDT | Maximum no. of Cell ID subject for MDT scope. Value is 32. |
| maxnoofTAforMDT | Maximum no. of TA subject for MDT scope. Value is 8. |

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9.2.3.y1 M1 Configuration

This IE defines the parameters for M1 measurement collection.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| M1 Reporting Trigger | M |  | ENUMERATED (periodic, A2event-triggered, A2event-triggered periodic, …) |  | - | - |
| M1 Threshold Event A2 | C-ifM1A2trigger |  |  | Included in case of event-triggered or event-triggered periodic reporting for measurement M1. | - | - |
| >CHOICE *Threshold* | M |  |  |  | - | - |
| >>*RSRP* |  |  |  |  |  | - |
| >>>Threshold RSRP | M |  | INTEGER (0..127)  | This IE is defined in TS 38.331 [18]. | - | - |
| >>*RSRQ* |  |  |  |  |  | - |
| >>>Threshold RSRQ | M |  | INTEGER (0..127)  | This IE is defined in TS 38.331 [18]. | - | - |
| >>SINR |  |  |  |  |  |  |
| >>>Threshold SINR | M |  | INTEGER (0..127)  | This IE is defined in TS 38.331 [18]. | - | - |
| M1 Periodic reporting | C-ifperiodicMDT |  |  | Included in case of periodic or event-triggered periodic reporting for measurement M1. | - | - |
| >Report interval | M |  | ENUMERATED (ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, min60) | This IE is defined in TS 38.331 [18]. | - | - |
| >Report amount | M |  | ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity) | Number of reports. | - | - |

|  |  |
| --- | --- |
| Condition | Explanation |
| C-ifM1A2trigger | This IE shall be present if the *Measurements to Activate* IE has the first bit set to “1” and the *M1* *Reporting Trigger* IE is set to “A2event-triggered” or to “A2event-triggered periodic”. |
| C-ifperiodicMDT | This IE shall be present if the *M1* *Reporting Trigger* IE is set to “periodic”, or to “A2event-triggered periodic”. |

### 9.2.3.x4 M4 Configuration

This IE defines the parameters for M4 measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| M4 Collection Period | M |  | ENUMERATED (ms1024, ms2048, ms5120, ms10240, min1, …) |  |
| M4 Links to log | M |  | ENUMERATED(uplink, downlink, both-uplink-and-downlink, …) |  |

### 9.2.3.x5 M5 Configuration

This IE defines the parameters for M5 measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| M5 Collection Period | M |  | ENUMERATED (ms1024, ms2048, ms5120, ms10240, min1, …) |  |
| M5 Links to log | M |  | ENUMERATED(uplink, downlink, both-uplink-and-downlink, …) |  |

### 9.2.3.x6 M6 Configuration

This IE defines the parameters for M6 measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| M6 Report Interval | M |  | ENUMERATED (ms120,ms240,ms480,ms640,ms1024, ms2048, ms5120, ms10240, ms20480,ms40960,min1,min6,min12,min30, …) |  |
|  |  |  |  |  |
| M6 Links to log | M |  | ENUMERATED(uplink, downlink, both-uplink-and-downlink, …) |  |

|  |  |
| --- | --- |
|  |  |
|  |  |

### 9.2.3.x7 M7 Configuration

This IE defines the parameters for M7 measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| M7 Collection Period | M |  | INTEGER (1..60, …) | Unit: minutes |
| M7 Links to log | M |  | ENUMERATED(uplink, downlink, both-uplink-and-downlink, …) |  |

|  |  |  |  |  |
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### 9.2.3.x10 MDT PLMN List

The purpose of the *MDT PLMN List* IE is to provide the list of PLMN allowed for MDT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MDT PLMN List** |  | *1..<maxnoofMDTPLMNs>* |  |  |
| >PLMN Identity | M |  | 9.2.2.4 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMDTPLMNs | Maximum no. of PLMNs in the MDT PLMN list. Value is 16. |

### 9.2.3.x11 Bluetooth Measurement Configuration

This IE defines the parameters for Bluetooth measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Bluetooth Measurement Configuration | M |  | ENUMERATED (Setup, …) |  |
| Bluetooth Measurement Configuration Name List |  | *0..1* |  |  |
| >Bluetooth Measurement Configuration Name Item IEs |  | *1 .. <maxnoofBluetoothName>* |  |  |
| >>Bluetooth Measurement Configuration Name | M |  | OCTET STRING (SIZE (1..248)) |  |
| BT RSSI | O |  | ENUMERATED (True, …) | In case of Immediate MDT, it corresponds to M8 measurement as defined in 37.320 [y]. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofBluetoothName | Maximum no. of Bluetooth local name used for Bluetooth measurement collection. Value is 4. |

### 9.2.3.x12 WLAN Measurement Configuration

This IE defines the parameters for WLAN measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| WLAN Measurement Configuration | M |  | ENUMERATED (Setup, …) |  |
| WLAN Measurement Configuration Name List |  | *0..1* |  |  |
| >WLAN Measurement Configuration Name Item IEs |  | *1 .. <maxnoofWLANName>* |  |  |
| >>WLAN Measurement Configuration Name | M |  | OCTET STRING (SIZE (1..32)) |  |
| WLAN RSSI | O |  | ENUMERATED (True, …) | In case of Immediate MDT, it corresponds to M8 as defined in 37.320 [y]. |
| WLAN RTT | O |  | ENUMERATED (True, …) | In case of Immediate MDT, it corresponds to M9 as defined in 37.320 [x]. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofWLANName | Maximum no. of WLAN SSID used for WLAN measurement collection. Value is 4. |

### 9.2.3.x13 Sensor Measurement Configuration

This IE defines the parameters for Sensor measurement collection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Sensor Measurement Configuration | M |  | ENUMERATED (Setup, …) |  |
| Sensor Measurement Configuration Name List |  | *0..1* |  |  |
| >Sensor Measurement Configuration Name Item IEs |  | *1 .. <maxnoofSensorName>* |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| >> Uncompensated Barometeric Configuration | O |  | ENUMERATED (True, …) |  |
|  |  |  |  |  |
| >> UE Speed Configuration | O |  | ENUMERATED (True, …) |  |
| >> *UE Orientation Configuration* | O |  | ENUMERATED (True, …) |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSensorName | Maximum no. of Sensor local name used for Sensor measurement collection. Value is 3 |

<<<<<<<<<<<<<<<<<<<< End of 8th Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.3.y2 Logged Event Trigger Config

This IE configures with UE with specific events for triggering MDT configuration. Current specified event is based on out of coverage (OOC) detection.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| >CHOICE *Event Type Trigger* | M |  |  |  |
| >> Out of Coverage |  | ENUMERATED (true, …) |  |  |
| >> L1 Event |  |  |  |  |
| >>CHOICE *L1 Event* *Threshold* | M |  |  |  |
| >>>RSRP |  |  |  |  |
| >>>>Threshold RSRP | M | INTEGER (0..127) | This IE is defined in TS 38.331 [18]. |  |
| >>>RSRQ |  |  |  |  |
| >>>>Threshold RSRQ | M | INTEGER (0..127) | This IE is defined in TS 38.331 [18]. |  |
|  |  |  |  |  |
| >>> Hysteresis |  |  | INTEGER (0..30) | This parameter is used within the entry and leave condition of an event triggered reporting condition. |
| >>> Time to trigger |  |  | ENUMERATED (ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120) | Time during which specific criteria for the event needs to be met in order to trigger a measurement report. |

### 9.3.1.xxx1 Area Scope of Neighbour Cells

This IE defines the area scope of neighbour cells for logged MDT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| ***Area Scope of Neighbour Cells*** | M | *1 .. <maxnoofFreqforMDT>* |  |  |
| >NR FreqInfo | M |  | 9.2.2.19 |  |
| >PCI List for MDT | O | *1 .. <maxnoofNeighPCIforMDT>* |  |  |
| >> NRPCI | M |  | INTEGER (0..1007) | NR Physical Cell ID |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofFreqforMDT | Maximum no. of Frequency Information subject for MDT scope. Value is 8. |
| maxnoofNeighPCIforMDT | Maximum no. of Neighbour cells subject for MDT scope. Value is 32. |

<<<<<<<<<<<<<<<<<<<< 9th 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

 ActivationIDforCellActivation,

 AMF-Region-Information,

 AMF-UE-NGAP-ID,

 AS-SecurityInformation,

 AssistanceDataForRANPaging,

 BitRate,

 Cause,

 CellAndCapacityAssistanceInfo-EUTRA,

 CellAndCapacityAssistanceInfo-NR,

 CellAssistanceInfo-NR,

 CPTransportLayerInformation,

 TNLA-To-Add-List,

 TNLA-To-Update-List,

 TNLA-To-Remove-List,

 TNLA-Setup-List,

 TNLA-Failed-To-Setup-List,

 CriticalityDiagnostics,

 XnUAddressInfoperPDUSession-List,

 DataTrafficResourceIndication,

 DeliveryStatus,

 DesiredActNotificationLevel,

 DRB-ID,

 DRB-List,

 DRB-Number,

 DRBsSubjectToStatusTransfer-List,

 DRBToQoSFlowMapping-List,

 E-UTRA-CGI,

 ExpectedUEBehaviour,

 FiveGCMobilityRestrictionListContainer,

 GlobalNG-RANNode-ID,

 GlobalNG-RANCell-ID,

 GUAMI,

 InterfaceInstanceIndication,

 I-RNTI,

 LocationInformationSNReporting,

 LocationReportingInformation,

 LowerLayerPresenceStatusChange,

 MR-DC-ResourceCoordinationInfo,

 ServedCells-E-UTRA,

 ServedCells-NR,

 ServedCellsToUpdate-E-UTRA,

 ServedCellsToUpdate-NR,

 MAC-I,

 MaskedIMEISV,

 MobilityRestrictionList,

 NG-RAN-Cell-Identity,

 NG-RANnodeUEXnAPID,

 NR-CGI,

 NE-DC-TDM-Pattern,

 PagingDRX,

 PagingPriority,

 PartialListIndicator,

 PLMN-Identity,

 PDCPChangeIndication,

 PDUSessionAggregateMaximumBitRate,

 PDUSession-ID,

 PDUSession-List,

 PDUSession-List-withCause,

 PDUSession-List-withDataForwardingFromTarget,

 PDUSession-List-withDataForwardingRequest,

 PDUSessionResourcesAdmitted-List,

 PDUSessionResourcesNotAdmitted-List,

 PDUSessionResourcesToBeSetup-List,

 PDUSessionResourceChangeRequiredInfo-SNterminated,

 PDUSessionResourceChangeRequiredInfo-MNterminated,

 PDUSessionResourceChangeConfirmInfo-SNterminated,

 PDUSessionResourceChangeConfirmInfo-MNterminated,

 PDUSessionResourceSecondaryRATUsageList,

 PDUSessionResourceSetupInfo-SNterminated,

 PDUSessionResourceSetupInfo-MNterminated,

 PDUSessionResourceSetupResponseInfo-SNterminated,

 PDUSessionResourceSetupResponseInfo-MNterminated,

 PDUSessionResourceModificationInfo-SNterminated,

 PDUSessionResourceModificationInfo-MNterminated,

 PDUSessionResourceModificationResponseInfo-SNterminated,

 PDUSessionResourceModificationResponseInfo-MNterminated,

 PDUSessionResourceModConfirmInfo-SNterminated,

 PDUSessionResourceModConfirmInfo-MNterminated,

 PDUSessionResourceModRqdInfo-SNterminated,

 PDUSessionResourceModRqdInfo-MNterminated,

 PDUSessionType,

 QoSFlowIdentifier,

 QoSFlowNotificationControlIndicationInfo,

 QoSFlows-List,

 RANPagingArea,

 ResetRequestTypeInfo,

 ResetResponseTypeInfo,

 RFSP-Index,

 RRCConfigIndication,

 RRCResumeCause,

 SCGConfigurationQuery,

 SecurityIndication,

 S-NG-RANnode-SecurityKey,

 SpectrumSharingGroupID,

 SplitSRBsTypes,

 S-NG-RANnode-Addition-Trigger-Ind,

 S-NSSAI,

 TAISupport-List,

 Target-CGI,

 TimeToWait,

 TraceActivation,

 UEAggregateMaximumBitRate,

 UEContextID,

 UEContextInfoRetrUECtxtResp,

 UEContextKeptIndicator,

 UEHistoryInformation,

 UEIdentityIndexValue,

 UERadioCapabilityForPaging,

 UERANPagingIdentity,

 UESecurityCapabilities,

 UPTransportLayerInformation,

 UserPlaneTrafficActivityReport,

 XnBenefitValue,

 RANPagingFailure,

 TNLConfigurationInfo,

 MaximumCellListSize,

 MessageOversizeNotification,

 NG-RANTraceID,

 MDT-Configuration,

 MDTPLMNList

FROM XnAP-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

 ProtocolIE-ContainerList{},

 ProtocolIE-ContainerPair{},

 ProtocolIE-ContainerPairList{},

 ProtocolIE-Single-Container{},

 XNAP-PRIVATE-IES,

 XNAP-PROTOCOL-EXTENSION,

 XNAP-PROTOCOL-IES,

 XNAP-PROTOCOL-IES-PAIR

FROM XnAP-Containers

 id-ActivatedServedCells,

 id-ActivationIDforCellActivation,

 id-AdditionalDRBIDs,

 id-AMF-Region-Information,

 id-AMF-Region-Information-To-Add,

 id-AMF-Region-Information-To-Delete,

 id-AssistanceDataForRANPaging,

 id-AvailableDRBIDs,

 id-Cause,

 id-cellAssistanceInfo-NR,

 id-CellAndCapacityAssistanceInfo-EUTRA,

 id-CellAndCapacityAssistanceInfo-NR,

 id-ConfigurationUpdateInitiatingNodeChoice,

 id-UEContextID,

 id-CriticalityDiagnostics,

 id-XnUAddressInfoperPDUSession-List,

 id-DesiredActNotificationLevel,

 id-DRBsSubjectToStatusTransfer-List,

 id-ExpectedUEBehaviour,

 id-FiveGCMobilityRestrictionListContainer,

 id-GlobalNG-RAN-node-ID,

 id-GUAMI,

 id-indexToRatFrequSelectionPriority,

 id-List-of-served-cells-E-UTRA,

 id-List-of-served-cells-NR,

 id-LocationInformationSN,

 id-LocationInformationSNReporting,

 id-LocationReportingInformation,

 id-MAC-I,

 id-MaskedIMEISV,

 id-MN-to-SN-Container,

 id-MobilityRestrictionList,

 id-M-NG-RANnodeUEXnAPID,

 id-new-NG-RAN-Cell-Identity,

 id-newNG-RANnodeUEXnAPID,

 id-oldNG-RANnodeUEXnAPID,

 id-OldtoNewNG-RANnodeResumeContainer,

 id-PagingDRX,

 id-PagingPriority,

 id-PartialListIndicator-EUTRA,

 id-PartialListIndicator-NR,

 id-PCellID,

 id-PDUSessionResourceSecondaryRATUsageList,

 id-PDUSessionResourcesActivityNotifyList,

 id-PDUSessionResourcesAdmitted-List,

 id-PDUSessionResourcesNotAdmitted-List,

 id-PDUSessionResourcesNotifyList,

 id-PDUSessionToBeAddedAddReq,

 id-PDUSessionToBeReleased-RelReqAck,

 id-RANPagingArea,

 id-requestedSplitSRB,

 id-RequiredNumberOfDRBIDs,

 id-ResetRequestTypeInfo,

 id-ResetResponseTypeInfo,

 id-RespondingNodeTypeConfigUpdateAck,

 id-RRCResumeCause,

 id-selectedPLMN,

 id-ServedCellsToActivate,

 id-servedCellsToUpdate-E-UTRA,

 id-ServedCellsToUpdateInitiatingNodeChoice,

 id-servedCellsToUpdate-NR,

 id-sourceNG-RANnodeUEXnAPID,

 id-SpareDRBIDs,

 id-S-NG-RANnodeMaxIPDataRate-UL,

 id-S-NG-RANnodeMaxIPDataRate-DL,

 id-S-NG-RANnodeUEXnAPID,

 id-TAISupport-list,

 id-Target2SourceNG-RANnodeTranspContainer,

 id-targetCellGlobalID,

 id-targetNG-RANnodeUEXnAPID,

 id-TimeToWait,

 id-TNLA-To-Add-List,

 id-TNLA-To-Update-List,

 id-TNLA-To-Remove-List,

 id-TNLA-Setup-List,

 id-TNLA-Failed-To-Setup-List,

 id-TraceActivation,

 id-UEContextInfoHORequest,

 id-UEContextInfoRetrUECtxtResp,

 id-UEContextKeptIndicator,

 id-UEContextRefAtSN-HORequest,

 id-UEHistoryInformation,

 id-UEIdentityIndexValue,

 id-UERANPagingIdentity,

 id-UESecurityCapabilities,

 id-UserPlaneTrafficActivityReport,

 id-XnRemovalThreshold,

 id-PDUSessionAdmittedAddedAddReqAck,

 id-PDUSessionNotAdmittedAddReqAck,

 id-SN-to-MN-Container,

 id-RRCConfigIndication,

 id-SplitSRB-RRCTransfer,

 id-UEReportRRCTransfer,

 id-PDUSessionReleasedList-RelConf,

 id-BearersSubjectToCounterCheck,

 id-PDUSessionToBeReleasedList-RelRqd,

 id-ResponseInfo-ReconfCompl,

 id-initiatingNodeType-ResourceCoordRequest,

 id-respondingNodeType-ResourceCoordResponse,

 id-PDUSessionToBeReleased-RelReq,

 id-PDUSession-SNChangeRequired-List,

 id-PDUSession-SNChangeConfirm-List,

 id-PDCPChangeIndication,

 id-SCGConfigurationQuery,

 id-UEContextInfo-SNModRequest,

 id-requestedSplitSRBrelease,

 id-PDUSessionAdmitted-SNModResponse,

 id-PDUSessionNotAdmitted-SNModResponse,

 id-admittedSplitSRB,

 id-admittedSplitSRBrelease,

 id-PDUSessionAdmittedModSNModConfirm,

 id-PDUSessionReleasedSNModConfirm,

 id-s-ng-RANnode-SecurityKey,

 id-PDUSessionToBeModifiedSNModRequired,

 id-S-NG-RANnodeUE-AMBR,

 id-PDUSessionToBeReleasedSNModRequired,

 id-target-S-NG-RANnodeID,

 id-S-NSSAI,

 id-MR-DC-ResourceCoordinationInfo,

 id-RANPagingFailure,

 id-UERadioCapabilityForPaging,

 id-PDUSessionDataForwarding-SNModResponse,

 id-Secondary-MN-Xn-U-TNLInfoatM,

 id-NE-DC-TDM-Pattern,

 id-InterfaceInstanceIndication,

 id-S-NG-RANnode-Addition-Trigger-Ind,

 id-DRBs-transferred-to-MN,

 id-TNLConfigurationInfo,

 id-MessageOversizeNotification,

 id-NG-RANTraceID,

 id-FastMCGRecoveryRRCTransfer-SN-to-MN,

 id-FastMCGRecoveryRRCTransfer-MN-to-SN,

 id-RequestedFastMCGRecoveryViaSRB3,

 id-AvailableFastMCGRecoveryViaSRB3,

 id-RequestedFastMCGRecoveryViaSRB3Release,

 id-ReleaseFastMCGRecoveryViaSRB3,

 id-MDT-Configuration,

 id-MDTPLMNList,

 maxnoofCellsinNG-RANnode,

 maxnoofDRBs,

 maxnoofPDUSessions,

 maxnoofQoSFlows

FROM XnAP-Constants;

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

--

-- HANDOVER REQUEST

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

HandoverRequest ::= SEQUENCE {

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

 ...

}

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

 { ID id-sourceNG-RANnodeUEXnAPID CRITICALITY reject TYPE NG-RANnodeUEXnAPID PRESENCE mandatory}|

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

 { ID id-targetCellGlobalID CRITICALITY reject TYPE Target-CGI PRESENCE mandatory}|

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

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

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

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

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

 { ID id-UEContextRefAtSN-HORequest CRITICALITY ignore TYPE UEContextRefAtSN-HORequest PRESENCE optional },

 ...

}

UEContextInfoHORequest ::= SEQUENCE {

 ng-c-UE-reference AMF-UE-NGAP-ID,

 cp-TNL-info-source CPTransportLayerInformation,

 ueSecurityCapabilities UESecurityCapabilities,

 securityInformation AS-SecurityInformation,

 indexToRatFrequencySelectionPriority RFSP-Index OPTIONAL,

 ue-AMBR UEAggregateMaximumBitRate,

 pduSessionResourcesToBeSetup-List PDUSessionResourcesToBeSetup-List,

 rrc-Context OCTET STRING,

 locationReportingInformation LocationReportingInformation OPTIONAL,

 mrl MobilityRestrictionList OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {UEContextInfoHORequest-ExtIEs} } OPTIONAL,

 ...

}

UEContextInfoHORequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::={

 { ID id-FiveGCMobilityRestrictionListContainer CRITICALITY ignore EXTENSION FiveGCMobilityRestrictionListContainer PRESENCE optional }|

 {ID id-MDTPLMNList CRITICALITY reject EXTENSION MDTPLMNList PRESENCE optional},

 ...

}

UEContextRefAtSN-HORequest ::= SEQUENCE {

 globalNG-RANNode-ID GlobalNG-RANNode-ID,

 sN-NG-RANnodeUEXnAPID NG-RANnodeUEXnAPID,

 iE-Extensions ProtocolExtensionContainer { {UEContextRefAtSN-HORequest-ExtIEs} } OPTIONAL,

 ...

}

UEContextRefAtSN-HORequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::={

 ...

}

**-- TEXT OMITTED –**

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

--

-- RETRIEVE UE CONTEXT RESPONSE

--

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

RetrieveUEContextResponse ::= SEQUENCE {

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

 ...

}

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

 { ID id-newNG-RANnodeUEXnAPID CRITICALITY ignore TYPE NG-RANnodeUEXnAPID PRESENCE mandatory}|

 { ID id-oldNG-RANnodeUEXnAPID CRITICALITY ignore TYPE NG-RANnodeUEXnAPID PRESENCE mandatory}|

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

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

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

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

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

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

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

 ...

}

**-- TEXT OMITTED –**

### 9.3.5 Information Element definitions

ASN1START

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

--

-- Information Element Definitions

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

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

 id-CNTypeRestrictionsForEquivalent,

 id-CNTypeRestrictionsForServing,

 id-CNTypeRestrictionsForEquivalent,

 id-CNTypeRestrictionsForServing,

 id-Additional-UL-NG-U-TNLatUPF-List,

 id-DefaultDRB-Allowed,

 id-EndpointIPAddressAndPort,

 id-FiveGCMobilityRestrictionListContainer,

 id-SecondarydataForwardingInfoFromTarget-List,

 id-LastE-UTRANPLMNIdentity,

 id-IntendedTDD-DL-ULConfiguration-NR,

 id-MaxIPrate-DL,

 id-SecurityResult,

 id-OldQoSFlowMap-ULendmarkerexpected,

 id-PDUSessionCommonNetworkInstance,

 id-BPLMN-ID-Info-EUTRA,

 id-BPLMN-ID-Info-NR,

 id-DRBsNotAdmittedSetupModifyList,

 id-Secondary-MN-Xn-U-TNLInfoatM,

 id-ULForwardingProposal,

 id-DRB-IDs-takenintouse,

 id-SplitSessionIndicator,

 id-NonGBRResources-Offered,

 id-MDT-Configuration,

 id-ExtendedRATRestrictionInformation,

 id-QoSMonitoringRequest,

 id-TraceCollectionEntityURI,

 maxEARFCN,

 maxnoofAllowedAreas,

 maxnoofAMFRegions,

 maxnoofAoIs,

 maxnoofBPLMNs,

 maxnoofCellsinAoI,

 maxnoofCellsinNG-RANnode,

 maxnoofCellsinRNA,

 maxnoofCellsinUEHistoryInfo,

 maxnoofCellsUEMovingTrajectory,

 maxnoofDRBs,

 maxnoofEPLMNs,

 maxnoofEUTRABands,

 maxnoofEUTRABPLMNs,

 maxnoofForbiddenTACs,

 maxnoofMBSFNEUTRA,

 maxnoofMultiConnectivityMinusOne,

 maxnoofNeighbours,

 maxnoofNRCellBands,

 maxnoofPDUSessions,

 maxnoofPLMNs,

 maxnoofProtectedResourcePatterns,

 maxnoofQoSFlows,

 maxnoofRANAreaCodes,

 maxnoofRANAreasinRNA,

 maxnoofSCellGroups,

 maxnoofSCellGroupsplus1,

 maxnoofSliceItems,

 maxnoofsupportedTACs,

 maxnoofsupportedPLMNs,

 maxnoofTAI,

 maxnoofTAIsinAoI,

 maxnoofTNLAssociations,

 maxnoofUEContexts,

 maxNRARFCN,

 maxNrOfErrors,

 maxnoofRANNodesinAoI,

 maxnooftimeperiods,

 maxnoofslots,

 maxnoofExtTLAs,

 maxnoofGTPTLAs,

 maxnoofBluetoothName,

 maxnoofCellIDforMDT,

 maxnoofMDTPLMNs,

 maxnoofTAforMDT,

 maxnoofWLANName,

 maxnoofSensorName,

 maxnoofNeighPCIforMDT,

 maxnoofFreqforMDT

FROM XnAP-Constants

 Criticality,

 ProcedureCode,

 ProtocolIE-ID,

 TriggeringMessage

FROM XnAP-CommonDataTypes

 ProtocolExtensionContainer{},

 ProtocolIE-Single-Container{},

 XNAP-PROTOCOL-EXTENSION,

 XNAP-PROTOCOL-IES

FROM XnAP-Containers;

-- A

**-- TEXT OMITTED –**

AreaOfInterest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

AreaScopeOfMDT-NR ::= CHOICE {

 cellBased CellBasedMDT-NR,

 tABased TABasedMDT,

 tAIBased TAIBasedMDT,

 ...

}

AreaScopeOfMDT-EUTRA ::= CHOICE {

 cellBased CellBasedMDT-EUTRA,

 tABased TABasedMDT,

 tAIBased TAIBasedMDT,

 ...

}

AreaScopeOfNeighCellsList ::= SEQUENCE (SIZE(1..maxnoofFreqforMDT)) OF AreaScopeOfNeighCellsItem

AreaScopeOfNeighCellsItem ::= SEQUENCE {

 nrFrequencyInfoforMDT NRFrequencyInfoforMDT,

 pciListForMDT PCIListForMDT OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { AreaScopeOfNeighCellsItem-ExtIEs} } OPTIONAL,

 ...

}

AreaScopeOfNeighCellsItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

AreaScopeOfNeighCellsList ::= SEQUENCE (SIZE(1..maxnoofFreqforMDT)) OF AreaScopeOfNeighCellsItem

AreaScopeOfNeighCellsItem ::= SEQUENCE {

 nrFrequencyInfo NRFrequencyInfo,

 pciListForMDT PCIListForMDT OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { AreaScopeOfNeighCellsItem-ExtIEs} } OPTIONAL,

 ...

}

AreaScopeOfNeighCellsItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

AS-SecurityInformation ::= SEQUENCE {

 key-NG-RAN-Star BIT STRING (SIZE(256)),

 ncc INTEGER (0..7),

 iE-Extensions ProtocolExtensionContainer { {AS-SecurityInformation-ExtIEs} } OPTIONAL,

 ...

}

**-- TEXT OMITTED –**

-- B

BluetoothMeasurementConfiguration ::= SEQUENCE {

 bluetoothMeasConfig BluetoothMeasConfig,

 bluetoothMeasConfigNameList BluetoothMeasConfigNameList OPTIONAL,

 bt-rssi ENUMERATED {true, ...} OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { BluetoothMeasurementConfiguration-ExtIEs } } OPTIONAL,

 ...

}

BluetoothMeasurementConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

BluetoothMeasConfigNameList ::= SEQUENCE (SIZE(1..maxnoofBluetoothName)) OF BluetoothName

BluetoothMeasConfig::= ENUMERATED {setup,...}

BluetoothName ::= OCTET STRING (SIZE (1..248))

BPLMN-ID-Info-EUTRA ::= SEQUENCE (SIZE(1..maxnoofEUTRABPLMNs)) OF BPLMN-ID-Info-EUTRA-Item

**-- TEXT OMITTED –**

CellAndCapacityAssistanceInfo-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

CellAssistanceInfo-EUTRA ::= CHOICE {

 limitedEUTRA-List SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI,

 full-List ENUMERATED {all-served-cells-NR, ...},

 choice-extension ProtocolIE-Single-Container { {CellAssistanceInfo-EUTRA-ExtIEs} }

}

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

 ...

}

CellBasedMDT-NR::= SEQUENCE {

 cellIdListforMDT-NR CellIdListforMDT-NR,

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

 ...

}

CellBasedMDT-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

CellIdListforMDT-NR ::= SEQUENCE (SIZE(1..maxnoofCellIDforMDT)) OF NR-CGI

CellBasedMDT-EUTRA::= SEQUENCE {

 cellIdListforMDT-EUTRA CellIdListforMDT-EUTRA,

 iE-Extensions ProtocolExtensionContainer { {CellBasedMDT-EUTRA-ExtIEs} } OPTIONAL,

 ...

}

CellBasedMDT-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

CellIdListforMDT-EUTRA ::= SEQUENCE (SIZE(1..maxnoofCellIDforMDT)) OF E-UTRA-CGI

CellGroupID ::= INTEGER (0..maxnoofSCellGroups)

Connectivity-Support ::= SEQUENCE {

 eNDC-Support ENUMERATED {supported, not-supported, ...},

 iE-Extensions ProtocolExtensionContainer { {Connectivity-Support-ExtIEs} } OPTIONAL,

 ...

}

Connectivity-Support-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

**-- TEXT OMITTED –**

EndpointIPAddressAndPort-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

EventA2 ::= SEQUENCE {

 a2Threshold MeasurementThresholdA2,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger,

 iE-Extensions ProtocolExtensionContainer { { EventA2-ExtIEs} } OPTIONAL,

 ...

}

EventA2-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

EventTriggered ::= SEQUENCE {

 loggedEventTriggeredConfig LoggedEventTriggeredConfig,

 iE-Extensions ProtocolExtensionContainer { { EventTriggered-ExtIEs} } OPTIONAL,

 ...

}

EventTriggered-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

EventType ::= ENUMERATED {

 report-upon-change-of-serving-cell,

 report-UE-moving-presence-into-or-out-of-the-Area-of-Interest,

 ...

}

EventTypeTrigger ::= CHOICE {

 outOfCoverage ENUMERATED {true, ...},

 eventL1 EventL1,

 choice-Extensions ProtocolIE-Single-Container { {EventTypeTrigger-ExtIEs} }

}

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

 ...

}

EventL1 ::= SEQUENCE {

 L1Threshold MeasurementThresholdL1LoggedMDT,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger,

 iE-Extensions ProtocolExtensionContainer { { EventL1-ExtIEs} } OPTIONAL,

 ...

}

EventL1-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

MeasurementThresholdL1LoggedMDT ::= CHOICE {

 threshold-RSRP Threshold-RSRP,

 threshold-RSRQ Threshold-RSRQ,

 ...

}

ExpectedActivityPeriod ::= INTEGER (1..30|40|50|60|80|100|120|150|180|181, ...)

**-- TEXT OMITTED –**

-- H

Hysteresis ::= INTEGER (0..30)

**-- TEXT OMITTED –**

-- I

ImmediateMDT-EUTRA ::= OCTET STRING

ImmediateMDT-NR ::= SEQUENCE {

 measurementsToActivate MeasurementsToActivate,

 m1Configuration M1Configuration OPTIONAL, m4Configuration M4Configuration OPTIONAL,

 m5Configuration M5Configuration OPTIONAL,

 mDT-Location-Info MDT-Location-Info OPTIONAL,

 m6Configuration M6Configuration OPTIONAL,

 m7Configuration M7Configuration OPTIONAL,

 bluetoothMeasurementConfiguration BluetoothMeasurementConfiguration OPTIONAL,

 wLANMeasurementConfiguration WLANMeasurementConfiguration OPTIONAL, sensorMeasurementConfiguration SensorMeasurementConfiguration OPTIONAL,

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

 ...

}

ImmediateMDT-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

InterfaceInstanceIndication ::= INTEGER (0..255, ...)

InterfacesToTrace ::= BIT STRING { ng-c (0), x-nc (1), uu (2), f1-c (3), e1 (4)} (SIZE(8))

I-RNTI ::= CHOICE {

 i-RNTI-full BIT STRING (SIZE(40)),

 i-RNTI-short BIT STRING (SIZE(24)),

 choice-extension ProtocolIE-Single-Container { {I-RNTI-ExtIEs} }

}

I-RNTI-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

**-- TEXT OMITTED –**

-- L

LCID ::= INTEGER (1..32, ...)

Links-to-log ::= ENUMERATED {uplink, downlink, both-uplink-and-downlink, ...}

ListOfCells ::= SEQUENCE (SIZE(1..maxnoofCellsinAoI)) OF CellsinAoI-Item

CellsinAoI-Item ::= SEQUENCE {

 pLMN-Identity PLMN-Identity,

 ng-ran-cell-id NG-RAN-Cell-Identity,

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

 ...

}

CellsinAoI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

ListOfRANNodesinAoI ::= SEQUENCE (SIZE(1.. maxnoofRANNodesinAoI)) OF GlobalNG-RANNodesinAoI-Item

GlobalNG-RANNodesinAoI-Item ::= SEQUENCE {

 global-NG-RAN-Node-ID GlobalNG-RANNode-ID,

 iE-Extensions ProtocolExtensionContainer { {GlobalNG-RANNodesinAoI-Item-ExtIEs} } OPTIONAL,

 ...

}

GlobalNG-RANNodesinAoI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

ListOfTAIsinAoI ::= SEQUENCE (SIZE(1..maxnoofTAIsinAoI)) OF TAIsinAoI-Item

TAIsinAoI-Item ::= SEQUENCE {

 pLMN-Identity PLMN-Identity,

 tAC TAC,

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

 ...

}

TAIsinAoI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

LocationInformationSNReporting ::= ENUMERATED {

 pSCell,

 ...

}

LocationReportingInformation ::= SEQUENCE {

 eventType EventType,

 reportArea ReportArea,

 areaOfInterest AreaOfInterestInformation OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {LocationReportingInformation-ExtIEs} } OPTIONAL,

 ...

}

LocationReportingInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::={

 ...

}

LoggedMDT-EUTRA ::= SEQUENCE {

 loggingInterval LoggingInterval,

 loggingDuration LoggingDuration,

 bluetoothMeasurementConfiguration BluetoothMeasurementConfiguration OPTIONAL,

 wLANMeasurementConfiguration WLANMeasurementConfiguration OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {LoggedMDT-EUTRA-ExtIEs} } OPTIONAL,

 ...

}

LoggedMDT-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

LoggedEventTriggeredConfig ::= SEQUENCE {

 eventTypeTrigger EventTypeTrigger,

 iE-Extensions ProtocolExtensionContainer { { LoggedEventTriggeredConfig-ExtIEs} } OPTIONAL,

 ...

}

LoggedEventTriggeredConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

LoggedMDT-NR ::= SEQUENCE {

 loggingInterval LoggingInterval,

 loggingDuration LoggingDuration, reportType ReportType,

 bluetoothMeasurementConfiguration BluetoothMeasurementConfiguration OPTIONAL,

 wLANMeasurementConfiguration WLANMeasurementConfiguration OPTIONAL,

 sensorMeasurementConfiguration SensorMeasurementConfiguration OPTIONAL,

 areaScopeOfNeighCellsList AreaScopeOfNeighCellsList OPTIONAL,

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

 ...

}

LoggedMDT-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

LoggingInterval ::= ENUMERATED { ms320, ms640, ms1280, ms2560, ms5120, ms10240, ms20480, ms30720, ms40960, ms61440}

LoggingDuration ::= ENUMERATED {m10, m20, m40, m60, m90, m120}

LowerLayerPresenceStatusChange ::= ENUMERATED {

 release-lower-layers,

 re-establish-lower-layers,

 ...

}

-- M

M1Configuration ::= SEQUENCE {

 m1reportingTrigger M1ReportingTrigger,

 m1thresholdeventA2 M1ThresholdEventA2 OPTIONAL,

-- Included in case of event-triggered, or event-triggered periodic reporting for measurement M1

 m1periodicReporting M1PeriodicReporting OPTIONAL,

-- Included in case of periodic or event-triggered periodic reporting

 iE-Extensions ProtocolExtensionContainer { { M1Configuration-ExtIEs} } OPTIONAL,

 ...

}

M1Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M1PeriodicReporting ::= SEQUENCE {

 reportInterval ReportIntervalMDT,

 reportAmount ReportAmountMDT,

 iE-Extensions ProtocolExtensionContainer { { M1PeriodicReporting-ExtIEs} } OPTIONAL,

 ...

}

M1PeriodicReporting-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M1ReportingTrigger ::= ENUMERATED{

 periodic,

 a2eventtriggered,

 a2eventtriggered-periodic,

 ...

}

M1ThresholdEventA2 ::= SEQUENCE {

 measurementThreshold MeasurementThresholdA2,

 iE-Extensions ProtocolExtensionContainer { { M1ThresholdEventA2-ExtIEs} } OPTIONAL,

 ...

}

M1ThresholdEventA2-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M3Configuration ::= SEQUENCE {

 m3period M3period,

 iE-Extensions ProtocolExtensionContainer { { M3Configuration-ExtIEs} } OPTIONAL,

 ...

}

M3Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M3period ::= ENUMERATED {ms100, ms1000, ms10000, ...,ms1024, ms1280, ms2048, ms2560, ms5120, ms10240, min1 }

M4Configuration ::= SEQUENCE {

 m4period M4period,

 m4-links-to-log Links-to-log,

 iE-Extensions ProtocolExtensionContainer { { M4Configuration-ExtIEs} } OPTIONAL,

 ...

}

M4Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M4period ::= ENUMERATED {ms1024, ms2048, ms5120, ms10240, min1, ... }

M5Configuration ::= SEQUENCE {

 m5period M5period,

 m5-links-to-log Links-to-log,

 iE-Extensions ProtocolExtensionContainer { { M5Configuration-ExtIEs} } OPTIONAL,

 ...

}

M5Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M5period ::= ENUMERATED {ms1024, ms2048, ms5120, ms10240, min1, ... }

M6Configuration ::= SEQUENCE {

 m6report-Interval M6report-Interval,

 m6-links-to-log Links-to-log,

 iE-Extensions ProtocolExtensionContainer { { M6Configuration-ExtIEs} } OPTIONAL,

 ...

}

M6Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M6report-Interval ::= ENUMERATED { ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12, min30,... }

M7Configuration ::= SEQUENCE {

 m7period M7period,

 m7-links-to-log Links-to-log,

 iE-Extensions ProtocolExtensionContainer { { M7Configuration-ExtIEs} } OPTIONAL,

 ...

}

M7Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

M7period ::= INTEGER(1..60, ...)

MAC-I ::= BIT STRING (SIZE(16))

MaskedIMEISV ::= BIT STRING (SIZE(64))

MaximumDataBurstVolume ::= INTEGER (0..4095, ...)

MaximumIPdatarate ::= SEQUENCE {

 maxIPrate-UL MaxIPrate,

 iE-Extensions ProtocolExtensionContainer { {MaximumIPdatarate-ExtIEs} } OPTIONAL,

 ...

}

MaximumIPdatarate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

{ ID id-MaxIPrate-DL CRITICALITY ignore EXTENSION MaxIPrate PRESENCE optional},

 ...

}

MaxIPrate ::= ENUMERATED {

 bitrate64kbs,

 max-UErate,

 ...

}

MBSFNControlRegionLength ::= INTEGER (0..3)

MBSFNSubframeAllocation-E-UTRA ::= CHOICE {

 oneframe BIT STRING (SIZE(6)),

 fourframes BIT STRING (SIZE(24)),

 choice-extension ProtocolIE-Single-Container { {MBSFNSubframeAllocation-E-UTRA-ExtIEs} }

}

MBSFNSubframeAllocation-E-UTRA-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

MBSFNSubframeInfo-E-UTRA ::= SEQUENCE (SIZE(1..maxnoofMBSFNEUTRA)) OF MBSFNSubframeInfo-E-UTRA-Item

MBSFNSubframeInfo-E-UTRA-Item ::= SEQUENCE {

 radioframeAllocationPeriod ENUMERATED{n1,n2,n4,n8,n16,n32,...},

 radioframeAllocationOffset INTEGER (0..7, ...),

 subframeAllocation MBSFNSubframeAllocation-E-UTRA,

 iE-Extensions ProtocolExtensionContainer { {MBSFNSubframeInfo-E-UTRA-Item-ExtIEs} } OPTIONAL,

 ...

}

MBSFNSubframeInfo-E-UTRA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::={

 ...

}

MDT-Activation ::= ENUMERATED {

 immediate-MDT-only,

 immediate-MDT-and-Trace,

 logged-MDT-only,

 ...

}

MDT-Configuration ::= SEQUENCE {

 mDT-Configuration-NR MDT-Configuration-NR OPTIONAL,

 mDT-Configuration-EUTRA MDT-Configuration-EUTRA OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { MDT-Configuration-ExtIEs} } OPTIONAL,

 ...

}

MDT-Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

MDT-Configuration-NR ::= SEQUENCE {

 mdt-Activation MDT-Activation,

 areaScopeOfMDT-NR AreaScopeOfMDT-NR OPTIONAL,

 mDTMode-NR MDTMode-NR,

 signallingBasedMDTPLMNList MDTPLMNList,

 iE-Extensions ProtocolExtensionContainer { { MDT-Configuration-NR-ExtIEs} } OPTIONAL,

 ...

}

MDT-Configuration-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

MDT-Configuration-EUTRA ::= SEQUENCE {

 mdt-Activation MDT-Activation,

 areaScopeOfMDT-EUTRA AreaScopeOfMDT-EUTRA OPTIONAL,

 mDTMode-EUTRA MDTMode-EUTRA,

 signallingBasedMDTPLMNList MDTPLMNList,

 iE-Extensions ProtocolExtensionContainer { { MDT-Configuration-EUTRA-ExtIEs} } OPTIONAL,

 ...

}

MDT-Configuration-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

MDT-Location-Info ::= BIT STRING (SIZE (8))

MDTPLMNList ::= SEQUENCE (SIZE(1..maxnoofMDTPLMNs)) OF PLMN-Identity

MDTMode-NR ::= CHOICE {

 immediateMDT ImmediateMDT-NR,

 loggedMDT LoggedMDT-NR,

 ...,

 mDTMode-NR-Extension MDTMode-NR-Extension

}

MDTMode-NR-Extension ::= ProtocolIE-Single-Container {{ MDTMode-NR-ExtensionIE }}

MDTMode-NR-ExtensionIE XNAP-PROTOCOL-IES ::= {

 ...

}

MDTMode-EUTRA ::= CHOICE {

 immediateMDT ImmediateMDT-EUTRA,

 loggedMDT LoggedMDT-EUTRA,

 ...,

 mDTMode-EUTRA-Extension MDTMode-EUTRA-Extension

}

MDTMode-EUTRA-Extension ::= ProtocolIE-Single-Container {{ MDTMode-EUTRA-ExtensionIE }}

MDTMode-EUTRA-ExtensionIE XNAP-PROTOCOL-IES ::= {

 ...

}

MeasurementsToActivate ::= BIT STRING (SIZE (8))

MeasurementThresholdA2 ::= CHOICE {

 threshold-RSRP Threshold-RSRP,

 threshold-RSRQ Threshold-RSRQ,

 threshold-SINR Threshold-SINR,

 choice-extension ProtocolIE-Single-Container { { MeasurementThresholdA2-ExtIEs} }

}

MeasurementThresholdA2-ExtIEs XNAP-PROTOCOL-IES ::= {

 ...

}

MobilityRestrictionList ::= SEQUENCE {

 serving-PLMN PLMN-Identity,

 equivalent-PLMNs SEQUENCE (SIZE(1..maxnoofEPLMNs)) OF PLMN-Identity OPTIONAL,

 rat-Restrictions RAT-RestrictionsList OPTIONAL,

 forbiddenAreaInformation ForbiddenAreaList OPTIONAL,

 serviceAreaInformation ServiceAreaList OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {MobilityRestrictionList-ExtIEs} } OPTIONAL,

 ...

}

MobilityRestrictionList-ExtIEs XNAP-PROTOCOL-EXTENSION ::={

{ ID id-LastE-UTRANPLMNIdentity CRITICALITY ignore EXTENSION PLMN-Identity PRESENCE optional }|

{ ID id-CNTypeRestrictionsForServing CRITICALITY ignore EXTENSION CNTypeRestrictionsForServing PRESENCE optional }|

{ ID id-CNTypeRestrictionsForEquivalent CRITICALITY ignore EXTENSION CNTypeRestrictionsForEquivalent PRESENCE optional },

 ...

}

-- N

NRFrequencyBand ::= INTEGER (1..1024, ...)

NRFrequencyBand-List ::= SEQUENCE (SIZE(1..maxnoofNRCellBands)) OF NRFrequencyBandItem

NRFrequencyBandItem ::= SEQUENCE {

 nr-frequency-band NRFrequencyBand,

 supported-SUL-Band-List SupportedSULBandList OPTIONAL,

 iE-Extension ProtocolExtensionContainer { {NRFrequencyBandItem-ExtIEs} } OPTIONAL,

 ...

}

NRFrequencyBandItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

NRFrequencyInfo ::= SEQUENCE {

 nrARFCN NRARFCN,

 sul-information SUL-Information OPTIONAL,

 frequencyBand-List NRFrequencyBand-List,

 iE-Extension ProtocolExtensionContainer { {NRFrequencyInfo-ExtIEs} } OPTIONAL,

 ...

}

NRFrequencyInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

NRFrequencyInfoforMDT ::= SEQUENCE {

 nrARFCN NRARFCN,

 frequencyBand-List NRFrequencyBand-List,

 iE-Extension ProtocolExtensionContainer { {NRFrequencyInfoforMDT-ExtIEs} } OPTIONAL,

 ...

}

NRFrequencyInfoforMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

NRModeInfo ::= CHOICE {

 fdd NRModeInfoFDD,

 tdd NRModeInfoTDD,

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

}

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

 ...

}

NRModeInfoFDD ::= SEQUENCE {

 ulNRFrequencyInfo NRFrequencyInfo,

 dlNRFrequencyInfo NRFrequencyInfo,

 ulNRTransmissonBandwidth NRTransmissionBandwidth,

 dlNRTransmissonBandwidth NRTransmissionBandwidth,

 iE-Extension ProtocolExtensionContainer { {NRModeInfoFDD-ExtIEs} } OPTIONAL,

 ...

}

NRModeInfoFDD-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

**-- TEXT OMITTED –**

-- P

PDUSessionCommonNetworkInstance ::= OCTET STRING

Periodical ::= SEQUENCE {

 iE-Extensions ProtocolExtensionContainer { { Periodical-ExtIEs} } OPTIONAL,

 ...

}

Periodical-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

PLMN-Identity ::= OCTET STRING (SIZE(3))

PrivacyIndicator ::= ENUMERATED {

 immediate-MDT,

 logged-MDT,

 ...

}

PCIListForMDT ::= SEQUENCE (SIZE(1.. maxnoofNeighPCIforMDT)) OF NRPCI

**-- TEXT OMITTED –**

-- R

ReflectiveQoSAttribute ::= ENUMERATED {subject-to-reflective-QoS, ...}

ReportAmountMDT ::= ENUMERATED{r1, r2, r4, r8, r16, r32, r64, infinity, ...}

ReportArea ::= ENUMERATED {

 cell,

 ...

}

ReportIntervalMDT ::= ENUMERATED {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, min60, ...}

ReportType ::= CHOICE {

 periodical Periodical,

 eventTriggered EventTriggered,

 ...

}

RequestReferenceID ::= INTEGER (1..64, ...)

**-- TEXT OMITTED –**

-- S

SecurityResult ::= SEQUENCE {

 integrityProtectionResult ENUMERATED {performed, not-performed, ...},

 confidentialityProtectionResult ENUMERATED {performed, not-performed, ...},

 iE-Extensions ProtocolExtensionContainer { {SecurityResult-ExtIEs} } OPTIONAL,

 ...

}

SecurityResult-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

SensorMeasurementConfiguration ::= SEQUENCE {

 sensorMeasConfig SensorMeasConfig,

 sensorMeasConfigNameList SensorMeasConfigNameList OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { SensorMeasurementConfiguration-ExtIEs } } OPTIONAL,

 ...

}

SensorMeasurementConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

SensorMeasConfigNameList ::= SEQUENCE (SIZE(1..maxnoofSensorName)) OF SensorName

SensorMeasConfig::= ENUMERATED {setup,...}

SensorName ::= SEQUENCE{

 uncompensatedBarometricConfig ENUMERATED {true, ...} OPTIONAL,

 ueSpeedConfig ENUMERATED {true, ...} OPTIONAL,

 ueOrientationConfig ENUMERATED {true, ...} OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {SensorNameConfig-ExtIEs} } OPTIONAL,

...

}

SensorNameConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

-- Served Cells E-UTRA IEs

ServedCellInformation-E-UTRA ::= SEQUENCE {

 e-utra-pci E-UTRAPCI,

 e-utra-cgi E-UTRA-CGI,

 tac TAC,

 ranac RANAC OPTIONAL,

 broadcastPLMNs SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF ServedCellInformation-E-UTRA-perBPLMN,

 e-utra-mode-info ServedCellInformation-E-UTRA-ModeInfo,

 numberofAntennaPorts NumberOfAntennaPorts-E-UTRA OPTIONAL,

 prach-configuration E-UTRAPRACHConfiguration OPTIONAL,

 mBSFNsubframeInfo MBSFNSubframeInfo-E-UTRA OPTIONAL,

 multibandInfo E-UTRAMultibandInfoList OPTIONAL,

 freqBandIndicatorPriority ENUMERATED {not-broadcast, broadcast, ...} OPTIONAL,

 bandwidthReducedSI ENUMERATED {scheduled, ...} OPTIONAL,

 protectedE-UTRAResourceIndication ProtectedE-UTRAResourceIndication OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {ServedCellInformation-E-UTRA-ExtIEs} } OPTIONAL,

 ...

}

ServedCellInformation-E-UTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

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

 ...

}

**-- TEXT OMITTED –**

-- T

TABasedMDT ::= SEQUENCE {

 tAListforMDT TAListforMDT,

 iE-Extensions ProtocolExtensionContainer { {TABasedMDT-ExtIEs} } OPTIONAL,

 ...

}

TABasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

TAC ::= OCTET STRING (SIZE (3))

TAIBasedMDT ::= SEQUENCE {

 tAIListforMDT TAIListforMDT,

 iE-Extensions ProtocolExtensionContainer { {TAIBasedMDT-ExtIEs} } OPTIONAL,

 ...

}

TAIBasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

TAIListforMDT ::= SEQUENCE (SIZE(1..maxnoofTAforMDT)) OF TAI

TAI ::= SEQUENCE {

 plmn-ID PLMN-Identity, tAC TAC,

 iE-Extensions ProtocolExtensionContainer { {TAI-ExtIEs} } OPTIONAL,

 ...

}

TAI-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

TAISupport-List ::= SEQUENCE (SIZE(1..maxnoofsupportedTACs)) OF TAISupport-Item

TAISupport-Item ::= SEQUENCE {

 tac TAC,

 broadcastPLMNs SEQUENCE (SIZE(1..maxnoofsupportedPLMNs)) OF BroadcastPLMNinTAISupport-Item,

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

 ...

}

TAISupport-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

TAListforMDT ::= SEQUENCE (SIZE(1..maxnoofTAforMDT)) OF TAC

Target-CGI ::= CHOICE {

 nr NR-CGI,

 e-utra E-UTRA-CGI,

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

}

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

 ...

}

Threshold-RSRQ ::= INTEGER(0..34)

Threshold-RSRP ::= INTEGER(0..97)

Threshold-SINR ::= INTEGER(0..127)

TimeToTrigger ::= ENUMERATED {ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120}

TimeToWait ::= ENUMERATED {

 v1s,

 v2s,

 v5s,

 v10s,

 v20s,

 v60s,

 ...

}

**-- TEXT OMITTED –**

TraceActivation ::= SEQUENCE {

 ng-ran-TraceID NG-RANTraceID,

 interfaces-to-trace BIT STRING { ng-c (0), x-nc (1), uu (2), f1-c (3), e1 (4)} (SIZE(8)),

 trace-depth Trace-Depth,

 trace-coll-address TransportLayerAddress,

 ie-Extension ProtocolExtensionContainer { {TraceActivation-ExtIEs} } OPTIONAL,

 ...

}

TraceActivation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

-- Extension to support MDT –

 {ID id-TraceCollectionEntityURI CRITICALITY ignore EXTENSION URI\_address PRESENCE optional },

 { ID id-MDT-Configuration CRITICALITY ignore EXTENSION MDT-Configuration PRESENCE optional},

 ...

}

Trace-Depth ::= ENUMERATED {

 minimum,

 medium,

 maximum,

 minimumWithoutVendorSpecificExtension,

 mediumWithoutVendorSpecificExtension,

 maximumWithoutVendorSpecificExtension,

 ...

}

TypeOfError ::= ENUMERATED {

 not-understood,

 missing,

 ...

}

**-- TEXT OMITTED –**

-- U

UEAggregateMaximumBitRate ::= SEQUENCE {

 dl-UE-AMBR BitRate,

 ul-UE-AMBR BitRate,

 iE-Extension ProtocolExtensionContainer { {UEAggregateMaximumBitRate-ExtIEs} } OPTIONAL,

 ...

}

UEAggregateMaximumBitRate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

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

UEContextID ::= CHOICE {

 rRCResume UEContextIDforRRCResume,

 rRRCReestablishment UEContextIDforRRCReestablishment,

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

}

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

 ...

}

UEContextIDforRRCResume ::= SEQUENCE {

 i-rnti I-RNTI,

 allocated-c-rnti C-RNTI,

 accessPCI NG-RAN-CellPCI,

 iE-Extension ProtocolExtensionContainer { {UEContextIDforRRCResume-ExtIEs} } OPTIONAL,

 ...

}

UEContextIDforRRCResume-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

UEContextIDforRRCReestablishment ::= SEQUENCE {

 c-rnti C-RNTI,

 failureCellPCI NG-RAN-CellPCI,

 iE-Extension ProtocolExtensionContainer { {UEContextIDforRRCReestablishment-ExtIEs} } OPTIONAL,

 ...

}

UEContextIDforRRCReestablishment-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

UEContextInfoRetrUECtxtResp ::= SEQUENCE {

 ng-c-UE-signalling-ref AMF-UE-NGAP-ID,

 signalling-TNL-at-source CPTransportLayerInformation,

 ueSecurityCapabilities UESecurityCapabilities,

 securityInformation AS-SecurityInformation,

 ue-AMBR UEAggregateMaximumBitRate,

 pduSessionResourcesToBeSetup-List PDUSessionResourcesToBeSetup-List,

 rrc-Context OCTET STRING,

 mobilityRestrictionList MobilityRestrictionList OPTIONAL,

 indexToRatFrequencySelectionPriority RFSP-Index OPTIONAL,

 iE-Extension ProtocolExtensionContainer { {UEContextInfoRetrUECtxtResp-ExtIEs} } OPTIONAL,

 ...

}

UEContextInfoRetrUECtxtResp-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-FiveGCMobilityRestrictionListContainer CRITICALITY ignore EXTENSION FiveGCMobilityRestrictionListContainer PRESENCE optional },

 ...

}

UEHistoryInformation ::= SEQUENCE (SIZE(1..maxnoofCellsinUEHistoryInfo)) OF LastVisitedCell-Item

UEIdentityIndexValue ::= CHOICE {

 indexLength10 BIT STRING (SIZE(10)),

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

}

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

 ...

}

UERadioCapabilityForPaging ::= SEQUENCE {

 uERadioCapabilityForPagingOfNR UERadioCapabilityForPagingOfNR OPTIONAL,

 uERadioCapabilityForPagingOfEUTRA UERadioCapabilityForPagingOfEUTRA OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {UERadioCapabilityForPaging-ExtIEs} } OPTIONAL,

 ...

}

UERadioCapabilityForPaging-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

UERadioCapabilityForPagingOfNR ::= OCTET STRING

UERadioCapabilityForPagingOfEUTRA ::= OCTET STRING

UERANPagingIdentity ::= CHOICE {

 i-RNTI-full BIT STRING ( SIZE (40)),

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

}

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

 ...

}

UESecurityCapabilities ::= SEQUENCE {

 nr-EncyptionAlgorithms BIT STRING {nea1-128(1),

 nea2-128(2),

 nea3-128(3)} (SIZE(16, ...)),

 nr-IntegrityProtectionAlgorithms BIT STRING {nia1-128(1),

 nia2-128(2),

 nia3-128(3)} (SIZE(16, ...)),

 e-utra-EncyptionAlgorithms BIT STRING {eea1-128(1),

 eea2-128(2),

 eea3-128(3)} (SIZE(16, ...)),

 e-utra-IntegrityProtectionAlgorithms BIT STRING {eia1-128(1),

 eia2-128(2),

 eia3-128(3)} (SIZE(16, ...)),

 iE-Extension ProtocolExtensionContainer { {UESecurityCapabilities-ExtIEs} } OPTIONAL,

 ...

}

UESecurityCapabilities-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

ULConfiguration::= SEQUENCE {

 uL-PDCP UL-UE-Configuration,

 iE-Extensions ProtocolExtensionContainer { {ULConfiguration-ExtIEs} } OPTIONAL,

 ...

}

ULConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

UL-UE-Configuration::= ENUMERATED {no-data, shared, only, ...}

ULForwarding ::= ENUMERATED {ul-forwarding-proposed, ...}

ULForwardingProposal ::= ENUMERATED {ul-forwarding-proposed, ...}

UPTransportLayerInformation ::= CHOICE {

 gtpTunnel GTPtunnelTransportLayerInformation,

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

}

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

 ...

}

UPTransportParameters ::= SEQUENCE (SIZE(1..maxnoofSCellGroupsplus1)) OF UPTransportParametersItem

UPTransportParametersItem ::= SEQUENCE {

 upTNLInfo UPTransportLayerInformation,

 cellGroupID CellGroupID,

 iE-Extension ProtocolExtensionContainer { {UPTransportParametersItem-ExtIEs} } OPTIONAL,

 ...

}

UPTransportParametersItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

UserPlaneTrafficActivityReport ::= ENUMERATED {inactive, re-activated, ...}

URI\_address ::= VisibleString

**-- TEXT OMITTED –**

-- W

WLANMeasurementConfiguration ::= SEQUENCE {

 wlanMeasConfig WLANMeasConfig,

 wlanMeasConfigNameList WLANMeasConfigNameList OPTIONAL,

 wlan-rssi ENUMERATED {true, ...} OPTIONAL,

 wlan-rtt ENUMERATED {true, ...} OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { WLANMeasurementConfiguration-ExtIEs } } OPTIONAL,

 ...

}

WLANMeasurementConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

WLANMeasConfigNameList ::= SEQUENCE (SIZE(1..maxnoofWLANName)) OF WLANName

WLANMeasConfig::= ENUMERATED {setup,...}

WLANName ::= OCTET STRING (SIZE (1..32))

-- X

XnBenefitValue ::= INTEGER (1..8, ...)

-- Y

-- Z

END

-- ASN1STOP

### 9.3.7 Constant definitions

-- ASN1START

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

--

-- Constant definitions

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

XnAP-Constants {

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

ngran-Access (22) modules (3) xnap (2) version1 (1) xnap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 ProcedureCode,

 ProtocolIE-ID

FROM XnAP-CommonDataTypes;

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

--

-- Elementary Procedures

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

id-handoverPreparation ProcedureCode ::= 0

id-sNStatusTransfer ProcedureCode ::= 1

id-handoverCancel ProcedureCode ::= 2

id-retrieveUEContext ProcedureCode ::= 3

id-rANPaging ProcedureCode ::= 4

id-xnUAddressIndication ProcedureCode ::= 5

id-uEContextRelease ProcedureCode ::= 6

id-sNGRANnodeAdditionPreparation ProcedureCode ::= 7

id-sNGRANnodeReconfigurationCompletion ProcedureCode ::= 8

id-mNGRANnodeinitiatedSNGRANnodeModificationPreparation ProcedureCode ::= 9

id-sNGRANnodeinitiatedSNGRANnodeModificationPreparation ProcedureCode ::= 10

id-mNGRANnodeinitiatedSNGRANnodeRelease ProcedureCode ::= 11

id-sNGRANnodeinitiatedSNGRANnodeRelease ProcedureCode ::= 12

id-sNGRANnodeCounterCheck ProcedureCode ::= 13

id-sNGRANnodeChange ProcedureCode ::= 14

id-rRCTransfer ProcedureCode ::= 15

id-xnRemoval ProcedureCode ::= 16

id-xnSetup ProcedureCode ::= 17

id-nGRANnodeConfigurationUpdate ProcedureCode ::= 18

id-cellActivation ProcedureCode ::= 19

id-reset ProcedureCode ::= 20

id-errorIndication ProcedureCode ::= 21

id-privateMessage ProcedureCode ::= 22

id-notificationControl ProcedureCode ::= 23

id-activityNotification ProcedureCode ::= 24

id-e-UTRA-NR-CellResourceCoordination ProcedureCode ::= 25

id-secondaryRATDataUsageReport ProcedureCode ::= 26

id-deactivateTrace ProcedureCode ::= 27

id-traceStart ProcedureCode ::= 28

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

--

-- Lists

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

maxEARFCN INTEGER ::= 262143

maxnoofAllowedAreas INTEGER ::= 16

maxnoofAMFRegions INTEGER ::= 16

maxnoofAoIs INTEGER ::= 64

maxnoofBPLMNs INTEGER ::= 12

maxnoofCellsinAoI INTEGER ::= 256

maxnoofCellsinUEHistoryInfo INTEGER ::= 16

maxnoofCellsinNG-RANnode INTEGER ::= 16384

maxnoofCellsinRNA INTEGER ::= 32

maxnoofCellsUEMovingTrajectory INTEGER ::= 16

maxnoofDRBs INTEGER ::= 32

maxnoofEUTRABands INTEGER ::= 16

maxnoofEUTRABPLMNs INTEGER ::= 6

maxnoofEPLMNs INTEGER ::= 15

maxnoofForbiddenTACs INTEGER ::= 4096

maxnoofMBSFNEUTRA INTEGER ::= 8

maxnoofMultiConnectivityMinusOne INTEGER ::= 3

maxnoofNeighbours INTEGER ::= 1024

maxnoofNRCellBands INTEGER ::= 32

maxnoofPLMNs INTEGER ::= 16

maxnoofPDUSessions INTEGER ::= 256

maxnoofProtectedResourcePatterns INTEGER ::= 16

maxnoofQoSFlows INTEGER ::= 64

maxnoofRANAreaCodes INTEGER ::= 32

maxnoofRANAreasinRNA INTEGER ::= 16

maxnoofRANNodesinAoI INTEGER ::= 64

maxnoofSCellGroups INTEGER ::= 3

maxnoofSCellGroupsplus1 INTEGER ::= 4

maxnoofSliceItems INTEGER ::= 1024

maxnoofsupportedPLMNs INTEGER ::= 12

maxnoofsupportedTACs INTEGER ::= 256

maxnoofTAI INTEGER ::= 16

maxnoofTAIsinAoI INTEGER ::= 16

maxnooftimeperiods INTEGER ::= 2

maxnoofTNLAssociations INTEGER ::= 32

maxnoofUEContexts INTEGER ::= 8192

maxNRARFCN INTEGER ::= 3279165

maxNrOfErrors INTEGER ::= 256

maxnoofslots INTEGER ::= 320

maxnoofExtTLAs INTEGER ::= 16

maxnoofGTPTLAs INTEGER ::= 16

maxnoofBluetoothName INTEGER ::= 4

maxnoofCellIDforMDT INTEGER ::= 32

maxnoofMDTPLMNs INTEGER ::= 16

maxnoofTAforMDT INTEGER ::= 8

maxnoofWLANName INTEGER ::= 4

maxnoofSensorName INTEGER ::= 3

maxnoofNeighPCIforMDT INTEGER ::= 32

maxnoofFreqforMDT INTEGER ::= 8

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

--

-- IEs

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

id-ActivatedServedCells ProtocolIE-ID ::= 0

id-ActivationIDforCellActivation ProtocolIE-ID ::= 1

id-admittedSplitSRB ProtocolIE-ID ::= 2

id-admittedSplitSRBrelease ProtocolIE-ID ::= 3

id-AMF-Region-Information ProtocolIE-ID ::= 4

id-AssistanceDataForRANPaging ProtocolIE-ID ::= 5

id-BearersSubjectToCounterCheck ProtocolIE-ID ::= 6

id-Cause ProtocolIE-ID ::= 7

id-cellAssistanceInfo-NR ProtocolIE-ID ::= 8

id-ConfigurationUpdateInitiatingNodeChoice ProtocolIE-ID ::= 9

id-CriticalityDiagnostics ProtocolIE-ID ::= 10

id-XnUAddressInfoperPDUSession-List ProtocolIE-ID ::= 11

id-DRBsSubjectToStatusTransfer-List ProtocolIE-ID ::= 12

id-ExpectedUEBehaviour ProtocolIE-ID ::= 13

id-GlobalNG-RAN-node-ID ProtocolIE-ID ::= 14

id-GUAMI ProtocolIE-ID ::= 15

id-indexToRatFrequSelectionPriority ProtocolIE-ID ::= 16

id-initiatingNodeType-ResourceCoordRequest ProtocolIE-ID ::= 17

id-List-of-served-cells-E-UTRA ProtocolIE-ID ::= 18

id-List-of-served-cells-NR ProtocolIE-ID ::= 19

id-LocationReportingInformation ProtocolIE-ID ::= 20

id-MAC-I ProtocolIE-ID ::= 21

id-MaskedIMEISV ProtocolIE-ID ::= 22

id-M-NG-RANnodeUEXnAPID ProtocolIE-ID ::= 23

id-MN-to-SN-Container ProtocolIE-ID ::= 24

id-MobilityRestrictionList ProtocolIE-ID ::= 25

id-new-NG-RAN-Cell-Identity ProtocolIE-ID ::= 26

id-newNG-RANnodeUEXnAPID ProtocolIE-ID ::= 27

id-UEReportRRCTransfer ProtocolIE-ID ::= 28

id-oldNG-RANnodeUEXnAPID ProtocolIE-ID ::= 29

id-OldtoNewNG-RANnodeResumeContainer ProtocolIE-ID ::= 30

id-PagingDRX ProtocolIE-ID ::= 31

id-PCellID ProtocolIE-ID ::= 32

id-PDCPChangeIndication ProtocolIE-ID ::= 33

id-PDUSessionAdmittedAddedAddReqAck ProtocolIE-ID ::= 34

id-PDUSessionAdmittedModSNModConfirm ProtocolIE-ID ::= 35

id-PDUSessionAdmitted-SNModResponse ProtocolIE-ID ::= 36

id-PDUSessionNotAdmittedAddReqAck ProtocolIE-ID ::= 37

id-PDUSessionNotAdmitted-SNModResponse ProtocolIE-ID ::= 38

id-PDUSessionReleasedList-RelConf ProtocolIE-ID ::= 39

id-PDUSessionReleasedSNModConfirm ProtocolIE-ID ::= 40

id-PDUSessionResourcesActivityNotifyList ProtocolIE-ID ::= 41

id-PDUSessionResourcesAdmitted-List ProtocolIE-ID ::= 42

id-PDUSessionResourcesNotAdmitted-List ProtocolIE-ID ::= 43

id-PDUSessionResourcesNotifyList ProtocolIE-ID ::= 44

id-PDUSession-SNChangeConfirm-List ProtocolIE-ID ::= 45

id-PDUSession-SNChangeRequired-List ProtocolIE-ID ::= 46

id-PDUSessionToBeAddedAddReq ProtocolIE-ID ::= 47

id-PDUSessionToBeModifiedSNModRequired ProtocolIE-ID ::= 48

id-PDUSessionToBeReleasedList-RelRqd ProtocolIE-ID ::= 49

id-PDUSessionToBeReleased-RelReq ProtocolIE-ID ::= 50

id-PDUSessionToBeReleasedSNModRequired ProtocolIE-ID ::= 51

id-RANPagingArea ProtocolIE-ID ::= 52

id-PagingPriority ProtocolIE-ID ::= 53

id-requestedSplitSRB ProtocolIE-ID ::= 54

id-requestedSplitSRBrelease ProtocolIE-ID ::= 55

id-ResetRequestTypeInfo ProtocolIE-ID ::= 56

id-ResetResponseTypeInfo ProtocolIE-ID ::= 57

id-RespondingNodeTypeConfigUpdateAck ProtocolIE-ID ::= 58

id-respondingNodeType-ResourceCoordResponse ProtocolIE-ID ::= 59

id-ResponseInfo-ReconfCompl ProtocolIE-ID ::= 60

id-RRCConfigIndication ProtocolIE-ID ::= 61

id-RRCResumeCause ProtocolIE-ID ::= 62

id-SCGConfigurationQuery ProtocolIE-ID ::= 63

id-selectedPLMN ProtocolIE-ID ::= 64

id-ServedCellsToActivate ProtocolIE-ID ::= 65

id-servedCellsToUpdate-E-UTRA ProtocolIE-ID ::= 66

id-ServedCellsToUpdateInitiatingNodeChoice ProtocolIE-ID ::= 67

id-servedCellsToUpdate-NR ProtocolIE-ID ::= 68

id-s-ng-RANnode-SecurityKey ProtocolIE-ID ::= 69

id-S-NG-RANnodeUE-AMBR ProtocolIE-ID ::= 70

id-S-NG-RANnodeUEXnAPID ProtocolIE-ID ::= 71

id-SN-to-MN-Container ProtocolIE-ID ::= 72

id-sourceNG-RANnodeUEXnAPID ProtocolIE-ID ::= 73

id-SplitSRB-RRCTransfer ProtocolIE-ID ::= 74

id-TAISupport-list ProtocolIE-ID ::= 75

id-TimeToWait ProtocolIE-ID ::= 76

id-Target2SourceNG-RANnodeTranspContainer ProtocolIE-ID ::= 77

id-targetCellGlobalID ProtocolIE-ID ::= 78

id-targetNG-RANnodeUEXnAPID ProtocolIE-ID ::= 79

id-target-S-NG-RANnodeID ProtocolIE-ID ::= 80

id-TraceActivation ProtocolIE-ID ::= 81

id-UEContextID ProtocolIE-ID ::= 82

id-UEContextInfoHORequest ProtocolIE-ID ::= 83

id-UEContextInfoRetrUECtxtResp ProtocolIE-ID ::= 84

id-UEContextInfo-SNModRequest ProtocolIE-ID ::= 85

id-UEContextKeptIndicator ProtocolIE-ID ::= 86

id-UEContextRefAtSN-HORequest ProtocolIE-ID ::= 87

id-UEHistoryInformation ProtocolIE-ID ::= 88

id-UEIdentityIndexValue ProtocolIE-ID ::= 89

id-UERANPagingIdentity ProtocolIE-ID ::= 90

id-UESecurityCapabilities ProtocolIE-ID ::= 91

id-UserPlaneTrafficActivityReport ProtocolIE-ID ::= 92

id-XnRemovalThreshold ProtocolIE-ID ::= 93

id-DesiredActNotificationLevel ProtocolIE-ID ::= 94

id-AvailableDRBIDs ProtocolIE-ID ::= 95

id-AdditionalDRBIDs ProtocolIE-ID ::= 96

id-SpareDRBIDs ProtocolIE-ID ::= 97

id-RequiredNumberOfDRBIDs ProtocolIE-ID ::= 98

id-TNLA-To-Add-List ProtocolIE-ID ::= 99

id-TNLA-To-Update-List ProtocolIE-ID ::= 100

id-TNLA-To-Remove-List ProtocolIE-ID ::= 101

id-TNLA-Setup-List ProtocolIE-ID ::= 102

id-TNLA-Failed-To-Setup-List ProtocolIE-ID ::= 103

id-PDUSessionToBeReleased-RelReqAck ProtocolIE-ID ::= 104

id-S-NG-RANnodeMaxIPDataRate-UL ProtocolIE-ID ::= 105

id-PDUSessionResourceSecondaryRATUsageList ProtocolIE-ID ::= 107

id-Additional-UL-NG-U-TNLatUPF-List ProtocolIE-ID ::= 108

id-SecondarydataForwardingInfoFromTarget-List ProtocolIE-ID ::= 109

id-LocationInformationSNReporting ProtocolIE-ID ::= 110

id-LocationInformationSN ProtocolIE-ID ::= 111

id-LastE-UTRANPLMNIdentity ProtocolIE-ID ::= 112

id-S-NG-RANnodeMaxIPDataRate-DL ProtocolIE-ID ::= 113

id-MaxIPrate-DL ProtocolIE-ID ::= 114

id-SecurityResult ProtocolIE-ID ::= 115

id-S-NSSAI ProtocolIE-ID ::= 116

id-MR-DC-ResourceCoordinationInfo ProtocolIE-ID ::= 117

id-AMF-Region-Information-To-Add ProtocolIE-ID ::= 118

id-AMF-Region-Information-To-Delete ProtocolIE-ID ::= 119

id-OldQoSFlowMap-ULendmarkerexpected ProtocolIE-ID ::= 120

id-RANPagingFailure ProtocolIE-ID ::= 121

id-UERadioCapabilityForPaging ProtocolIE-ID ::= 122

id-PDUSessionDataForwarding-SNModResponse ProtocolIE-ID ::= 123

id-DRBsNotAdmittedSetupModifyList ProtocolIE-ID ::= 124

id-Secondary-MN-Xn-U-TNLInfoatM ProtocolIE-ID ::= 125

id-NE-DC-TDM-Pattern ProtocolIE-ID ::= 126

id-PDUSessionCommonNetworkInstance ProtocolIE-ID ::= 127

id-BPLMN-ID-Info-EUTRA ProtocolIE-ID ::= 128

id-BPLMN-ID-Info-NR ProtocolIE-ID ::= 129

id-InterfaceInstanceIndication ProtocolIE-ID ::= 130

id-S-NG-RANnode-Addition-Trigger-Ind ProtocolIE-ID ::= 131

id-DefaultDRB-Allowed ProtocolIE-ID ::= 132

id-DRB-IDs-takenintouse ProtocolIE-ID ::= 133

id-SplitSessionIndicator ProtocolIE-ID ::= 134

id-CNTypeRestrictionsForEquivalent ProtocolIE-ID ::= 135

id-CNTypeRestrictionsForServing ProtocolIE-ID ::= 136

id-DRBs-transferred-to-MN ProtocolIE-ID ::= 137

id-ULForwardingProposal ProtocolIE-ID ::= 138

id-EndpointIPAddressAndPort ProtocolIE-ID ::= 139

id-IntendedTDD-DL-ULConfiguration-NR ProtocolIE-ID ::= 140

id-TNLConfigurationInfo ProtocolIE-ID ::= 141

id-PartialListIndicator ProtocolIE-ID ::= 142

id-MessageOversizeNotification ProtocolIE-ID ::= 143

id-CellAndCapacityAssistanceInfo ProtocolIE-ID ::= 144

id-NG-RANTraceID ProtocolIE-ID ::= 145

id-NonGBRResources-Offered ProtocolIE-ID ::= 146

id-FastMCGRecoveryRRCTransfer-SN-to-MN ProtocolIE-ID ::= 147

id-RequestedFastMCGRecoveryViaSRB3 ProtocolIE-ID ::= 148

id-AdmittedFastMCGRecoveryViaSRB3 ProtocolIE-ID ::= 149

id-RequestedFastMCGRecoveryViaSRB3Release ProtocolIE-ID ::= 150

id-AdmittedFastMCGRecoveryViaSRB3Release ProtocolIE-ID ::= 151

id-FastMCGRecoveryRRCTransfer-MN-to-SN ProtocolIE-ID ::= 152

id-ExtendedRATRestrictionInformation ProtocolIE-ID ::= 153

id-QoSMonitoringRequest ProtocolIE-ID ::= 154

id-FiveGCMobilityRestrictionListContainer ProtocolIE-ID ::= 155

id-PartialListIndicator-EUTRA ProtocolIE-ID ::= 156

id-CellAndCapacityAssistanceInfo-EUTRA ProtocolIE-ID ::= 157

id-MDT-Configuration ProtocolIE-ID ::= x3

id-MDTPLMNList ProtocolIE-ID ::= y4

id-TraceCollectionEntityURI ProtocolIE-ID ::= XXX

END

-- ASN1STOP

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