**3GPP TSG-RAN WG3 Meeting #111-e *R3-211193***

**E-meeting, 25 Jan – 5 Feb 2021**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.413** | **CR** | **0538** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network | **x** |

|  |
| --- |
|  |
| ***Title:***  | Supported RATs of the AMF |
|  |  |
| ***Source to WG:*** | Huawei, CMCC, Vodafone, Telecom Italia, China Telecom, Deutsche Telekom, China Unicom |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NB\_IOTenh3-Core |  | ***Date:*** | 2021-02-01 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | The supported RATs of the RAN node and CN nodes changes from release to release, to avoid misconfiguration, to ease the OAM effort, to avoid the potential IoT issues such as UE access failure and Core network resource waste, it is needed to include the supported RATs of the CN to RAN in NG SETUP RESPONSE and AMF CONFIGURATION UPDATE messages.The *RAT Information* IE was introduced to inform the RAT information associated with the TAC of the indicated PLMN(s). It is noticed that It is not clear whether the CN will fail the NG setup procedure or not in case none of the RATs from the RAN node is supported by the CN node. |
|  |  |
| ***Summary of change:*** | Include the supported RATs of the CN to RAN in NG SETUP RESPONSE and AMF CONFIGURATION UPDATE messages.Add abnormal condition to clarify that the CN will fail the NG setup procedure in case none of the RATs from the RAN node is supported. |
|  |  |
| ***Consequences if not approved:*** | Potential IOT issue will occur, for example:If RAN support RAT 1 and 2, CN only support RAT 1, if the RAN does not aware of that, the RAT 2 UE access towards this CN will be failed or has to be rerouted. |
|  |  |
| ***Clauses affected:*** | 8.7.1.2, 8.7.1.4, 8.7.3.2, 9.2.6.2, 9.2.6.7, 9.3.3.xx (new), 9.4.4, 9.4.5, 9.4.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Add abnormal condition proposed in R3-210124. |

***--------Start of the First Change------***

### 8.7.1 NG Setup

#### 8.7.1.1 General

The purpose of the NG Setup procedure is to exchange application level data needed for the NG-RAN node and the AMF to correctly interoperate on the NG-C interface. This procedure shall be the first NGAP procedure triggered after the TNL association has become operational. The procedure uses non-UE associated signalling.

This procedure erases any existing application level configuration data in the two nodes, replaces it by the one received and clears AMF overload state information at the NG-RAN node. If the NG-RAN node and AMF do not agree on retaining the UE contexts this procedure also re-initialises the NGAP UE-related contexts (if any) and erases all related signalling connections in the two nodes like an NG Reset procedure would do.

#### 8.7.1.2 Successful Operation



Figure 8.7.1.2-1: NG setup: successful operation

The NG-RAN node initiates the procedure by sending an NG SETUP REQUEST message including the appropriate data to the AMF. The AMF responds with an NG SETUP RESPONSE message including the appropriate data.

If the *Configured TAC Indication* IE set to "true” is included for a Tracking Area contained in the *Supported TA List* IE in the NG SETUP REQUEST message, the AMF may take it into account to optimise NG-C signalling towards this NG-RAN node.

If the *UE Retention Information* IE set to “ues-retained“ is included in the NG SETUP REQUEST message, the AMF may accept the proposal to retain the existing UE related contexts and signalling connections by including the *UE Retention Information* IE set to “ues-retained“ in the NG SETUP RESPONSE message.

If the AMF supports IAB, the AMF shall include the *IAB Supported* IE in the NG SETUP RESPONSE message.

The AMF shall include the *Backup AMF Name* IE, if available, in the *Served GUAMI List* IE in the NG SETUP RESPONSE message. The NG-RAN node shall, if supported, consider the AMF as indicated by the *Backup AMF Name* IE when performing AMF reselection, as specified in TS 23.501 [9].

If the *GUAMI Type* IE is included in the NG SETUP RESPONSE message, the NG-RAN node shall store the received value and use it for further AMF selection as defined in TS 23.501 [9].

If the *RAN Node Name* IE is included in the NG SETUP REQUEST message, the AMF may use this IE as a human readable name of the NG-RAN node. If the *Extended RAN Node Name* IE is included in the NG SETUP REQUEST message, the AMF may use this IE as a human readable name of the NG-RAN node and shall ignore the *RAN Node Name* IE if also included.

If the *AMF Name* IE is included in the NG SETUP RESPONSE message, the NG-RAN node may use this IE as a human readable name of the AMF. If the *Extended AMF Name* IE is included in the NG SETUP RESPONSE message, the NG-RAN node may use this IE as a human readable name of the AMF and shall ignore the *AMF Name* IE if also included.

If the *NB-IoT Default Paging DRX* IE is included in the NG SETUP REQUEST message, the AMF shall take it into account for paging.

If the *RAT Information* IE is included in the NG SETUP REQUEST message, the AMF shall handle this information as specified in TS 23.502 [10].

If the *NID* IE within the *NPN Support* IE is included within a *Broadcast PLMN Item* IE in the NG SETUP REQUEST message, the AMF shall consider that the NG-RAN node supports the indicated S-NSSAI(s) for the corresponding tracking area code for the SNPN identified by the *PLMN Identity* IE and the *NID* IE.

If the *NID* IE within the *NPN Support* IE is included within a *PLMN Support Item* IE in the NG SETUP RESPONSE message, the NG-RAN node shall consider that the AMF supports the SNPN identified by the *PLMN Identity* IE and the *NID* IE.

If the *Supported RATs* IE is included in the NG SETUP RESPONSE message, the NG-RAN node shall consider that the AMF supports the indicated RAT(s).

***--------Start of the Next Change------***

#### 8.7.1.4 Abnormal Conditions

If the NG-RAN node initiates the procedure by sending an NG SETUP REQUEST message including the *PLMN Identity* IEs and none of the PLMNs provided by the NG-RAN node is identified by the AMF, then the AMF shall reject the NG Setup procedure with an appropriate cause value.

If the NG-RAN node initiates the procedure by sending an NG SETUP REQUEST message including the *RAT Information* IEs, and none of the RATs provided by the NG-RAN node is supported by the AMF, then the AMF shall fail the NG Setup procedure with an appropriate cause value.

***--------Start of the Next Change------***

### 8.7.3 AMF Configuration Update

#### 8.7.3.1 General

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

#### 8.7.3.2 Successful Operation



Figure 8.7.3.2-1: AMF configuration update: successful operation

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

If the *PLMN Support List* IE is included in the AMF CONFIGURATION UPDATE message, the NG-RAN node shall overwrite the whole list of supported PLMN Identities and the corresponding list of AMF slices for each PLMN Identity and use the received values for further network slice selection and AMF selection.

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

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

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

If the AMF CONFIGURATION UPDATE message includes *AMF TNL Association to Remove List* IE, and the *Endpoint IP Address* and the *Port Number* IE for both TNL endpoints of the TNL association(s) is included in the *AMF TNL Association to Remove List* IE, the NG-RAN node shall, if supported, initiate removal of the TNL association(s) indicated by both received TNL endpoints towards the AMF. If the *Endpoint IP Address* IE, or the *Endpoint IP Address* IE and the *Port Number* IE for one or both of the TNL endpoints is included in the *AMF TNL Association to Remove List* IE, the NG-RAN node shall, if supported, initiate removal of the TNL association(s) indicated by the received endpoint IP address(es).If the *AMF Name* IE is included in the AMF CONFIGURATION UPDATE message, the NG-RAN node shall overwrite the previously stored AMF name and use it to identify the AMF.

If the AMF CONFIGURATION UPDATE message includes the *AMF Name* IE, the NG-RAN node may store it or update this IE value if already stored, and use it as a human readable name of the AMF. If the AMF CONFIGURATION UPDATE message includes the *Extended AMF Name* IE, the NG-RAN node may store it or update this IE value if already stored, and use it as a human readable name of the AMF and shall ignore the *AMF Name* IE if also included.

If the *Served GUAMI List* IE is included in the AMF CONFIGURATION UPDATE message, the NG-RAN node shall overwrite the whole list of GUAMIs served by the AMF by the new list and use the received values for further AMF management and AMF selection as defined in TS 23.501 [9].

If the *Relative AMF Capacity* IE is included in the AMF CONFIGURATION UPDATE message, the NG-RAN node may use it as defined in TS 23.501 [9].

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

If the *TNL Association Usage* IE or the *TNL Address Weight Factor* IE is included in the *AMF TNL Association to Add List* IE or the *AMF TNL Association to Update List* IE, the NG-RAN node shall, if supported, consider it as defined in TS 23.502 [10].

If the *NID* IE within the *NPN Support* IE is included within a *PLMN Support Item* IE in the AMF CONFIGURATION UPDATE message, the NG-RAN node shall consider that the AMF supports the SNPN identified by the *PLMN Identity* IE and the *NID* IE.

If the *Supported RATs* IE is included in the AMF CONFIGURATION UPDATE message, the NG-RAN node shall consider that the AMF supports the indicated RAT(s).

***--------Start of the Next Change------***

#### 9.2.6.2 NG SETUP RESPONSE

This message is sent by the AMF to transfer application layer information for an NG-C interface instance.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| AMF Name | M |  | 9.3.3.21  |  | YES | reject |
| **Served GUAMI List** |  | *1* |  |  | YES | reject |
| >**Served GUAMI Item** |  | *1..<maxnoofServedGUAMIs>* |  |  | - |  |
| >>GUAMI | M |  | 9.3.3.3 |  | - |  |
| >>Backup AMF Name | O |  | AMF Name9.3.3.21 |  | - |  |
| >>GUAMI Type | O |  | ENUMERATED (native, mapped, …) |  | YES | ignore |
| Relative AMF Capacity | M |  | 9.3.1.32 |  | YES | ignore |
| **PLMN Support List** |  | *1* |  |  | YES | reject |
| **>PLMN Support Item** |  | *1..<maxnoofPLMNs>* |  |  | - |  |
| >>PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| >>Slice Support List | M |  | 9.3.1.17 | Supported S-NSSAIs per PLMN | - |  |
| >>NPN Support | O |  | 9.3.3.44 | If *NID* IE is included, it identifies a SNPN together with the *PLMN Identity* IE. | YES | reject |
| >>Extended Slice Support List | M |  | 9.3.1.191 | Additional Supported S-NSSAIs per PLMN | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| UE Retention Information | O |  | 9.3.1.117 |  | YES | ignore |
| IAB Supported | O |  | ENUMERATED (true, ...) | Indication of support for IAB. | YES | ignore |
| Extended AMF Name | O |  | 9.3.3.51 |  | YES | ignore |
| Supported RATs | O |  | 9.3.3.xx | Indication of the supported RATs. | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofServedGUAMIs | Maximum no. of GUAMIs served by an AMF. Value is 256. |
| maxnoofPLMNs | Maximum no. of PLMNs per message. Value is 12. |

***--------Start of the Next Change------***

#### 9.2.6.7 AMF CONFIGURATION UPDATE

This message is sent by the AMF to transfer updated information for an NG-C interface instance.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| AMF Name | O |  | 9.3.3.21 |  | YES | reject |
| **Served GUAMI List** |  | *0..1* |  |  | YES | reject |
| >**Served GUAMI Item** |  | *1..<maxnoofServedGUAMIs>* |  |  | - |  |
| >>GUAMI | M |  | 9.3.3.3 |  | - |  |
| >>Backup AMF Name | O |  | AMF Name9.3.3.21 |  | - |  |
| >>GUAMI Type | O |  | ENUMERATED (native, mapped, …) |  | YES | ignore |
| Relative AMF Capacity | O |  | 9.3.1.32 |  | YES | ignore |
| **PLMN Support List** |  | *0..1* |  |  | YES | reject |
| **>PLMN Support Item** |  | *1..<maxnoofPLMNs>* |  |  | - |  |
| >>PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| >>Slice Support List | M |  | 9.3.1.17 | Supported S-NSSAIs per PLMN or per SNPN. | - |  |
| >>NPN Support | O |  | 9.3.3.44 | If the *NID* IE is included, it identifies a SNPN together with the *PLMN Identity* IE. | YES | reject |
| >>Extended Slice Support List | O |  | 9.3.1.191 | Additional Supported S-NSSAIs per PLMN | YES | reject |
| **AMF TNL Association to Add List**  |  | *0..1* |  |  | YES | ignore |
| **>AMF TNL Association to Add Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>AMF TNL Association Address | M |  | CP Transport Layer Information9.3.2.6 | AMF Transport Layer information used to set up the new TNL association. | - |  |
| >>TNL Association Usage | O |  | 9.3.2.9 |  | - |  |
| >>TNL Address Weight Factor | M |  | 9.3.2.10 |  | - |  |
| **AMF TNL Association to Remove List**  |  | *0..1* |  |  | YES | ignore |
| **>AMF TNL Association to Remove Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>AMF TNL Association Address | M |  | CP Transport Layer Information9.3.2.6 | Transport Layer Address of the AMF. | - |  |
| >>TNL Association Transport Layer Address NG-RAN | O |  | CP Transport Layer Address9.3.2.6 | Transport Layer Address of the NG-RAN node. | YES | reject |
| **AMF TNL Association to Update List**  |  | *0..1* |  |  | YES | ignore |
| **>AMF TNL Association to Update Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>AMF TNL Association Address | M |  | CP Transport Layer Information9.3.2.6 | AMF Transport Layer information used to identify the TNL association to be updated. | - |  |
| >>TNL Association Usage | O |  | 9.3.2.9 |  | - |  |
| >>TNL Address Weight Factor | O |  | 9.3.2.10 |  | - |  |
| Extended AMF Name | O |  | 9.3.3.51 |  | YES | ignore |
| Supported RATs | O |  | 9.3.3.xx | Indication of the supported RATs. | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofServedGUAMIs | Maximum no. of GUAMIs served by an AMF. Value is 256. |
| maxnoofPLMNs | Maximum no. of PLMNs per message. Value is 12. |
| maxnoofTNLAssociations | Maximum no. of TNL Associations between the NG-RAN node and the AMF. Value is 32. |

***--------Start of the Next Change------***

#### 9.3.3.51 Extended AMF Name

This IE provides extended human readable name of the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| AMF Name Visible | O |  | VisibleString (SIZE(1..150, …)) |  |
| AMF Name UTF8 | O |  | UTF8String (SIZE(1..150, …)) |  |

#### 9.3.3.xx Supported RATs

This IE provides supported RATs of the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Supported RATs | M |  | BIT STRING {e-UTRA (0),nR (1), nR-unlicensed (2), NB-IoT(3)}(SIZE(8, …)) | Each position in the bitmap represents a RAT.If a bit is set to "1", the respective RAT is supported by the AMF.If a bit is set to "0", the respective RAT is not supported by the AMF.Bits 4-7 reserved for future use. |

***--------Start of the Next Change------***

### 9.4.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for NGAP.

--

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

NGAP-PDU-Contents {

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

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

 AllowedNSSAI,

 AMFName,

 AMFSetID,

***//skip the unchanged part***

 RAN-UE-NGAP-ID,

 RedirectionVoiceFallback,

 RelativeAMFCapacity,

 RepetitionPeriod,

 ResetType,

 RGLevelWirelineAccessCharacteristics,

 RoutingID,

 RRCEstablishmentCause,

 RRCInactiveTransitionReportRequest,

 RRCState,

 SecurityContext,

 SecurityKey,

 SerialNumber,

 ServedGUAMIList,

 SliceSupportList,

 S-NSSAI,

 SONConfigurationTransfer,

 SourceToTarget-TransparentContainer,

 SourceToTarget-AMFInformationReroute,

 SRVCCOperationPossible,

 SupportedRATs,

 SupportedTAList,

 Suspend-Request-Indication,

 Suspend-Response-Indication,

 TAI,

 TAIListForPaging,

 TAIListForRestart,

 TargetID,

 TargetToSource-TransparentContainer,

 TargettoSource-Failure-TransparentContainer,

 TimeToWait,

 TNLAssociationList,

 TraceActivation,

 TrafficLoadReductionIndication,

 TransportLayerAddress,

 UEAggregateMaximumBitRate,

 UE-associatedLogicalNG-connectionList,

***//skip the unchanged part***

 id-RoutingID,

 id-RRCEstablishmentCause,

 id-RRCInactiveTransitionReportRequest,

 id-RRC-Resume-Cause,

 id-RRCState,

 id-SecurityContext,

 id-SecurityKey,

 id-SelectedPLMNIdentity,

 id-SerialNumber,

 id-ServedGUAMIList,

 id-SliceSupportList,

 id-S-NSSAI,

 id-SONConfigurationTransferDL,

 id-SONConfigurationTransferUL,

 id-SourceAMF-UE-NGAP-ID,

 id-SourceToTarget-TransparentContainer,

 id-SourceToTarget-AMFInformationReroute,

 id-SRVCCOperationPossible,

 id-SupportedRATs,

 id-SupportedTAList,

 id-Suspend-Request-Indication,

 id-Suspend-Response-Indication,

 id-TAI,

 id-TAIListForPaging,

 id-TAIListForRestart,

 id-TargetID,

 id-TargetToSource-TransparentContainer,

 id-TargettoSource-Failure-TransparentContainer,

 id-TimeToWait,

***//skip the unchanged part***

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

--

-- NG SETUP RESPONSE

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

NGSetupResponse ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {NGSetupResponseIEs} },

 ...

}

NGSetupResponseIEs NGAP-PROTOCOL-IES ::= {

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

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

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

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

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

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

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

 { ID id-Extended-AMFName CRITICALITY ignore TYPE Extended-AMFName PRESENCE optional }|

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

 ...

}

***//skip the unchanged part***

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

--

-- AMF CONFIGURATION UPDATE

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

AMFConfigurationUpdate ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {AMFConfigurationUpdateIEs} },

 ...

}

AMFConfigurationUpdateIEs NGAP-PROTOCOL-IES ::= {

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

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

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

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

 { ID id-AMF-TNLAssociationToAddList CRITICALITY ignore TYPE AMF-TNLAssociationToAddList PRESENCE optional }|

 { ID id-AMF-TNLAssociationToRemoveList CRITICALITY ignore TYPE AMF-TNLAssociationToRemoveList PRESENCE optional }|

 { ID id-AMF-TNLAssociationToUpdateList CRITICALITY ignore TYPE AMF-TNLAssociationToUpdateList PRESENCE optional }|

 { ID id-Extended-AMFName CRITICALITY ignore TYPE Extended-AMFName PRESENCE optional }|

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

 ...

}

***--------Start of the Next Change------***

### 9.4.5 Information Element Definitions

-- ASN1START

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

--

-- Information Element Definitions

--

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

NGAP-IEs {

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

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 id-AdditionalDLForwardingUPTNLInformation,

 id-AdditionalULForwardingUPTNLInformation,

***//skip the unchanged part***

ConfiguredNSSAI ::= OCTET STRING (SIZE(128))

RejectedNSSAIinPLMN ::= OCTET STRING (SIZE(32))

RejectedNSSAIinTA ::= OCTET STRING (SIZE(32))

SST ::= OCTET STRING (SIZE(1))

SupportedRATs ::= BIT STRING (SIZE(8, ...))

SupportedTAList ::= SEQUENCE (SIZE(1..maxnoofTACs)) OF SupportedTAItem

SupportedTAItem ::= SEQUENCE {

 tAC TAC,

 broadcastPLMNList BroadcastPLMNList,

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

 ...

}

SupportedTAItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

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

 {ID id-RAT-Information CRITICALITY reject EXTENSION RAT-Information PRESENCE optional },

 ...

}

SuspendIndicator ::= ENUMERATED {

 true,

 ...

}

Suspend-Request-Indication ::= ENUMERATED {

 suspend-requested,

 ...

}

Suspend-Response-Indication ::= ENUMERATED {

 suspend-indicated,

 ...

}

***--------Start of the Next Change------***

### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

--

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

NGAP-Constants {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

***//skip the unchanged part***

 id-NPN-AccessInformation ProtocolIE-ID ::= 259

 id-NPN-PagingAssistanceInformation ProtocolIE-ID ::= 260

 id-NPN-MobilityInformation ProtocolIE-ID ::= 261

 id-TargettoSource-Failure-TransparentContainer ProtocolIE-ID ::= 262

 id-NID ProtocolIE-ID ::= 263

 id-UERadioCapabilityID ProtocolIE-ID ::= 264

 id-UERadioCapability-EUTRA-Format ProtocolIE-ID ::= 265

 id-DAPSRequestInfo ProtocolIE-ID ::= 266

 id-DAPSResponseInfoList ProtocolIE-ID ::= 267

 id-EarlyStatusTransfer-TransparentContainer ProtocolIE-ID ::= 268

 id-NotifySourceNGRANNode ProtocolIE-ID ::= 269

 id-ExtendedSliceSupportList ProtocolIE-ID ::= 270

 id-ExtendedTAISliceSupportList ProtocolIE-ID ::= 271

 id-ConfiguredTACIndication ProtocolIE-ID ::= 272

 id-Extended-RANNodeName ProtocolIE-ID ::= 273

 id-Extended-AMFName ProtocolIE-ID ::= 274

 id-GlobalCable-ID ProtocolIE-ID ::= 275

 id-QosMonitoringReportingFrequency ProtocolIE-ID ::= 276

 id-QosFlowParametersList ProtocolIE-ID ::= 277

 id-SupportedRATs ProtocolIE-ID ::= xxx

END

-- ASN1STOP

***--------End of the Changes------***