**3GPP TSG-RAN3 #114bis-e R3-221344**

**17-26 Jan 2022**

**Online**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **36.413** | **CR** | **1862** | **rev** | **1** | **Current version:** | **16.8.0** |  |
|  |
| *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:***  | S1AP Rapporteur Corrections |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 2021-12-21 |
|  |  |  |  |  |
| ***Category:*** | **D** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | Rapporteur Corrections |
|  |  |
| ***Summary of change:*** | * Section 8.7.1.2, 8.10.1.2, 8.10.2.2, 8.11.2.2, change “eNB” to “eNB”, and change “MME” to “MME” in the figures
* Section 8.9.2, correct “thie”
* Section 8.9.3, correct the font color.
* Section 9.1.7.1, correct the reference, i.e. change it to TS 36.331 [16].
* Section 9.2.3.27, correct the typo “NTL”
* ASN.1 section: Add ASN1START and ASN1STOP to align with other RAN3 specifications; replace non-ASCII characters in ASN.1, e.g. change “–” to “-”
 |
|  |  |
| ***Consequences if not approved:*** | Errors remain in the specification. |
|  |  |
| ***Clauses affected:*** | 8.7.1.2.1, 8.7.1.2.2, 8.7.2.2, 8.9.2, 8.9.3, 8.10.1.2, 8.10.2.2, 8.11.2.2, 9.1.7.1, 9.2.3.27, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, B.2 |
|  |  |
|  | **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:*** | Rev 1: updated with the corrections in 8.9.2 and 8.9.3 |

**<<<<<< START OF CHANGE >>>>>>**

#### 8.7.1.2 Successful Operation

##### 8.7.1.2.1 Reset Procedure Initiated from the MME



Figure 8.7.1.2.1-1: Reset procedure initiated from the MME. Successful operation.

In the event of a failure at the MME, which has resulted in the loss of some or all transaction reference information, a RESET message shall be sent to the eNB.

At reception of the RESET message the eNB shall release all allocated resources on S1 and Uu related to the UE association(s) indicated explicitly or implicitly in the RESET message and remove the indicated UE contexts including S1AP ID.

After the eNB has released all assigned S1 resources and the UE S1AP IDs for all indicated UE associations which can be used for new UE-associated logical S1-connections over the S1 interface, the eNB shall respond with the RESET ACKNOWLEDGE message. The eNB does not need to wait for the release of radio resources to be completed before returning the RESET ACKNOWLEDGE message.

If the RESET message contains the *UE-associated logical S1-connection list* IE, then:

- The eNB shall use the *MME UE S1AP ID* IE and/or the *eNB UE S1AP ID* IE to explicitly identify the UE association(s) to be reset.

- The eNB shall include in the RESET ACKNOWLEDGE message, for each UE association to be reset, the *UE-associated logical S1-connection Item* IE in the *UE-associated logical S1-connection list* IE. The *UE-associated logical S1-connection Item* IEs shall be in the same order as received in the RESET message and shall include also unknown UE-associated logical S1-connections. Empty *UE-associated logical S1-connection Item* IEs, received in the RESET message, may be omitted in the RESET ACKNOWLEDGE message.

- If the *MME UE S1AP ID* IE is included in the *UE-associated logical S1-connection Item* IE for a UE association, the eNB shall include the *MME UE S1AP ID* IE in the corresponding *UE-associated logical S1-connection Item* IE in the RESET ACKNOWLEDGE message.

- If the *eNB UE S1AP ID* IE is included in the *UE-associated logical S1-connection Item* IE for a UE association, the eNB shall include the *eNB UE S1AP ID* IE in the corresponding *UE-associated logical S1-connection Item* IE in the RESET ACKNOWLEDGE message.

**Interactions with other procedures:**

If the RESET message is received, any other ongoing procedure (except for another Reset procedure) on the same S1 interface related to a UE association, indicated explicitly or implicitly in the RESET message, shall be aborted.

##### 8.7.1.2.2 Reset Procedure Initiated from the E-UTRAN



Figure 8.7.1.2.2-1: Reset procedure initiated from the E-UTRAN. Successful operation.

In the event of a failure at the eNB, which has resulted in the loss of some or all transaction reference information, a RESET message shall be sent to the MME.

At reception of the RESET message the MME shall release all allocated resources on S1 related to the UE association(s) indicated explicitly or implicitly in the RESET message and remove the S1AP ID for the indicated UE associations.

After the MME has released all assigned S1 resources and the UE S1AP IDs for all indicated UE associations which can be used for new UE-associated logical S1-connections over the S1 interface, the MME shall respond with the RESET ACKNOWLEDGE message.

If the RESET message contains the *UE-associated logical S1-connection list* IE, then:

- The MME shall use the *MME UE S1AP ID* IE and/or the *eNB UE S1AP ID* IE to explicitly identify the UE association(s) to be reset.

- The MME shall include in the RESET ACKNOWLEDGE message, for each UE association to be reset, the *UE-associated logical S1-connection Item* IE in the *UE-associated logical S1-connection list* IE. The *UE-associated logical S1-connection Item* IEs shall be in the same order as received in the RESET message and shall include also unknown UE-associated logical S1-connections. Empty *UE-associated logical S1-connection Item* IEs, received in the RESET message, may be omitted in the RESET ACKNOWLEDGE message.

- If the *MME UE S1AP ID* IE is included in the *UE-associated logical S1-connection Item* IE for a UE association, the MME shall include the *MME UE S1AP ID* IE in the corresponding *UE-associated logical S1-connection Item* IE in the RESET ACKNOWLEDGE message.

- If the *eNB UE S1AP ID* IE is included in a *UE-associated logical S1-connection Item* IE for a UE association, the MME shall include the *eNB UE S1AP ID* IE in the corresponding *UE-associated logical S1-connection Item* IE in the RESET ACKNOWLEDGE message.

**Interactions with other procedures:**

If the RESET message is received, any other ongoing procedure (except for another Reset procedure) on the same S1 interface related to a UE association, indicated explicitly or implicitly in the RESET message, shall be aborted.

#### 8.7.1.3 Abnormal Conditions

##### 8.7.1.3.1 Abnormal Condition at the EPC

If the RESET message includes the *UE-associated logical S1-connection list* IE, but neither the *MME UE S1AP ID* IE nor the *eNB UE S1AP ID* IE is present for a *UE-associated logical S1-connection Item* IE, then the MME shall ignore the *UE-associated logical S1-connection Item* IE. The MME may return the empty *UE-associated logical S1-connection Item* IE in the *UE-associated logical S1-connection list* IE in the RESET ACKNOWLEDGE message.

##### 8.7.1.3.2 Abnormal Condition at the E-UTRAN

If the RESET message includes the *UE-associated logical S1-connection list* IE, but neither the *MME UE S1AP ID* IE nor the *eNB UE S1AP ID* IE is present for a *UE-associated logical S1-connection Item* IE, then the eNB shall ignore the *UE-associated logical S1-connection Item* IE. The eNB may return the empty *UE-associated logical S1-connection Item* IE in the *UE-associated logical S1-connection list* IE in the RESET ACKNOWLEDGE message.

##### 8.7.1.3.3 Crossing of Reset Messages

If a Reset procedure is ongoing in the eNB and the eNB receives a RESET message from the peer entity on the same S1 interface related to one or several UE associations previously requested to be reset, indicated explicitly or implicitly in the received RESET message, the eNB shall respond with the RESET ACKNOWLEDGE message as described in 8.7.1.2.1.

If a Reset procedure is ongoing in the MME and the MME receives a RESET message from the peer entity on the same S1 interface related to one or several UE associations previously requested to be reset, indicated explicitly or implicitly in the received RESET message, the MME shall respond with the RESET ACKNOWLEDGE message as described in 8.7.1.2.2.

### 8.7.2 Error Indication

#### 8.7.2.1 General

The Error Indication procedure is initiated by a node in order to report detected errors in one incoming message, provided they cannot be reported by an appropriate failure message.

If the error situation arises due to reception of a message utilising UE associated signalling, then the Error Indication procedure uses UE associated signalling. Otherwise the procedure uses non-UE associated signalling.

#### 8.7.2.2 Successful Operation



Figure 8.7.2.2-1: Error Indication procedure, MME originated. Successful operation.



Figure 8.7.2.2-2: Error Indication procedure, eNB originated. Successful operation.

When the conditions defined in clause 10 are fulfilled, the Error Indication procedure is initiated by an ERROR INDICATION message sent from the receiving node.

The ERROR INDICATION message shall contain at least either the *Cause* IE or the *Criticality Diagnostics* IE. In case the Error Indication procedure is triggered by utilising UE associated signalling the *MME UE S1AP ID* IE and the *eNB UE S1AP ID* IE shall be included in the ERROR INDICATION message. If one or both of *MME UE S1AP ID* IE and the *eNB UE S1AP ID* IE are not correct, the cause shall be set to appropriate value, e.g., “Unknown or already allocated MME UE S1AP ID”, “Unknown or already allocated eNB UE S1AP ID” or “Unknown or inconsistent pair of UE S1AP ID”.

**<<<<<< NEXT CHANGE >>>>>>**

### 8.9.2 Successful Operation



Figure 8.9.2-1: UE Capability Info Indication procedure. Successful operation.

The eNB controlling a UE-associated logical S1-connection initiates the procedure by sending a UE CAPABILITY INFO INDICATION message to the MME including the UE capability information. The UE CAPABILITY INFO INDICATION message may also include paging specific UE capability information within the *UE Radio Capability for Paging* IE. The UE capability information received by the MME shall replace previously stored corresponding UE capability information in the MME for the UE, as described in TS 23.401 [11].

If UE CAPABILITY INFO INDICATION message contains the *LTE-M indication* IE, the MME shall, if supported, store this information in the UE context and use it according to TS 23.401 [11].

If the UE indicates the support for UE Application Layer Measurement, the eNB shall if supported include the UE Application Layer Measurement Capability IE in the UE CAPABILITY INFO INDICATION message. The MME shall, if supported, store and use this information when initiating UE Application Layer Measurement.

If UE CAPABILITY INFO INDICATION message contains the *UE Radio Capability – NR Format* IE, the MME shall, if supported, use it according to TS 23.401 [11].

If the UE RADIO CAPABILITY INFO INDICATION message includes the *UE Radio Capability for Paging* IE and the *UE Radio Capability for Paging – NR Format* IE, the MME shall, if supported, use it according to TS 23.401 [11].

### 8.9.3 Abnormal Conditions

If the UE RADIO CAPABILITY INFO INDICATION message includes the *UE Radio Capability for Paging – NR Format* IE without the *UE Radio Capability for Paging* IE, the MME shall consider it as a logical error and act as described in subclause 10.4.

**<<<<<< NEXT CHANGE >>>>>>**

## 8.10 Trace Procedures

### 8.10.1 Trace Start

#### 8.10.1.1 General

The purpose of the Trace Start procedure is to allow the MME to request the eNB to initiate a trace function for a UE. The procedure uses UE-associated signalling. If no UE-associated logical S1-connection exists, the UE-associated logical S1-connection shall be established as part of the procedure.

#### 8.10.1.2 Successful Operation



Figure 8.10.1.2-1: Trace Start procedure.

The MME initiates the procedure by sending a TRACE START message. On receipt of a TRACE START message, the eNB shall initiate the requested trace function as described in TS 32.422 [10].

If the *Trace Activation* IE is included in the TRACE START message which includes the *MDT Activation* IE set to “Immediate MDT and Trace”, the eNB shall if supported, initiate the requested trace session and MDT session as described in TS 32.422 [10].

If the *Trace Activation* IE is included in the TRACE START message which includes the *MDT Activation* IE set to “Immediate MDT Only”, “Logged MDT only” or “Logged MBSFN MDT”, the target eNB shall, if supported, initiate the requested MDT session as described in TS 32.422 [10] and the target eNB 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 eNB 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 TRACE START message which includes the *MDT Activation* IE set to “Immediate MDT Only”, “Logged MDT only” or “Logged MBSFN MDT” and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the eNB may use it to propagate the MDT Configuration as described in TS 37.320 [31].

If the *Trace Activation* IE includes the *MBSFN-ResultToLog* IE, within the *MDT Configuration* IE, the eNB shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [31].

If the *Trace Activation* IE includes the *MBSFN-AreaId* IE in the *MBSFN-ResultToLog* IE, within the *MDT Configuration* IE, the eNB shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [31].

If the *Trace Activation* IE includes the *UE Application layer measurement configuration* IE, the eNB shall, if supported, initiate the requested trace session and QoE Measurement Collection function as described in TS 36.300 [14].

If the *Trace Activation* IE includes the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the eNB shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [31].

If the *Trace Activation* IE includes the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the eNB shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [31].

If the *Trace Activation* IE includes the *MDT Configuration NR* IE, the eNB shall, if supported, store and forward *MDT Configuration NR* IE to the SgNB, if the eNB has configured EN-DC for the UE.

**Interactions with other procedures:**

If the eNB is not able to initiate the trace session due to ongoing handover of the UE to another eNB, the eNB shall initiate a Trace Failure Indication procedure with the appropriate cause value.

### 8.10.2 Trace Failure Indication

#### 8.10.2.1 General

The purpose of the Trace Failure Indication procedure is to allow the eNB to inform the MME that a Trace Start procedure or a Deactivate Trace procedure has failed due to an interaction with a handover procedure. The procedure uses UE-associated signalling.

#### 8.10.2.2 Successful Operation





Figure 8.10.2.2-1: Trace Failure Indication procedure.

The eNB initiates the procedure by sending a TRACE FAILURE INDICATION message. Upon reception of the TRACE FAILURE INDICATION message, the MME shall take appropriate actions based on the failure reason indicated by the *Cause* IE.

**<<<<<< NEXT CHANGE >>>>>>**

#### 8.11.2.2 Successful Operation



Figure 8.11.2.2-1: Location Report Failure Indication procedure.

Upon reception of the LOCATION REPORT FAILURE INDICATION message the MME shall take appropriate actions based on the failure reason indicated by the *Cause* IE.

#### **<<<<<< NEXT CHANGE >>>>>>**

#### 9.1.7.1 INITIAL UE MESSAGE

This message is sent by the eNB to transfer the initial layer 3 message to the MME over the S1 interface.

Direction: eNB → MME

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.1.1 |  | YES | ignore |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| NAS-PDU | M |  | 9.2.3.5 |  | YES | reject |
| TAI | M |  | 9.2.3.16 | Indicating the Tracking Area from which the UE has sent the NAS message. | YES | reject |
| E-UTRAN CGI | M |  | 9.2.1.38 | Indicating the E-UTRAN CGI from which the UE has sent the NAS message. | YES | ignore |
| RRC Establishment Cause | M |  | 9.2.1.3a |  | YES | ignore |
| S-TMSI | O |  | 9.2.3.6 |  | YES | reject |
| CSG Id | O |  | 9.2.1.62 |  | YES | reject |
| GUMMEI | O |  | 9.2.3.9 |  | YES | reject |
| Cell Access Mode | O |  | 9.2.1.74 |  | YES | reject |
| GW Transport Layer Address | O |  | Transport Layer Address 9.2.2.1 | Indicating GW Transport Layer Address if the GW is collocated with eNB. | YES | ignore |
| Relay Node Indicator | O |  | 9.2.1.79 | Indicating a relay node. | YES | reject |
| GUMMEI Type | O |  | ENUMERATED (native, mapped, …, mappedFrom5G) |  | YES | ignore |
| Tunnel Information for BBF | O |  | Tunnel Information 9.2.2.3 | Indicating HeNB’s Local IP Address assigned by the broadband access provider, UDP port Number. | YES | ignore |
| SIPTO L-GW Transport Layer Address | O |  | Transport Layer Address 9.2.2.1 | Indicating SIPTO L-GW Transport Layer Address if the SIPTO L-GW is collocated with eNB. | YES | ignore |
| LHN ID | O |  | 9.2.1.92 |  | YES | ignore |
| MME Group ID | O |  | 9.2.3.44 |  | YES | ignore |
| UE Usage Type | O |  | INTEGER (0..255) |  | YES | ignore |
| CE-mode-B Support Indicator | O |  | 9.2.1.118 |  | YES | ignore |
| DCN ID | O |  | INTEGER (0..65535) |  | YES | ignore |
| Coverage Level | O |  | ENUMERATED (extendedcoverage, …) |  | YES | ignore |
| UE Application Layer Measurement Capability | O |  | BIT STRING (SIZE(8)) | Each bit in the bitmap indicates an UE Application layer measurement capability, refer to TS 36.331 [16].Bit 0 = QoE Measurement for streaming serviceBit 1 = QoE Measurement for MTSI serviceValue ‘1’ indicates “Capable” and value ‘0’ indicates “not Capable”.Unused bits are reserved for future use. | YES | ignore |
| EDT Session | O |  | ENUMERATED (true, …) |  | YES |  |
| IAB Node Indication | O |  | ENUMERATED (true, ...) | Indication of an IAB-node. | YES | reject |

**<<<<<< NEXT CHANGE >>>>>>**

#### 9.2.3.27 SON Information

This IE identifies the nature of the configuration information transferred, i.e., a request, a reply or a report.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| CHOICE *SON Information* | M |  |  |  |  |  |
| *>SON Information Request* |  |  |  |  |  |  |
| >>SON Information Request | M |  | ENUMERATED(X2 TNL Configuration Info, …, Time synchronisation Info, Activate Muting, Deactivate Muting) | In the current version of the specification only "X2 TNL Configuration Info" is applicable for EN-DC. | - |  |
| *>SON Information Reply* |  |  |  |  |  |  |
| >>SON Information Reply | M |  | 9.2.3.28 |  | - |  |
| >*SON Information Report* |  |  |  |  |  |  |
| >>SON Information Report | M |  | 9.2.3.39 |  | YES | ignore |

###

**<<<<<< NEXT CHANGE >>>>>>**

### 9.3.2 Elementary Procedure Definitions

-- ASN1START

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

--

-- Elementary Procedure definitions

--

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

S1AP-PDU-Descriptions {

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

eps-Access (21) modules (3) s1ap (1) version1 (1) s1ap-PDU-Descriptions (0)}

<Unaffected part is omitted>

mMEEarlyStatusTransfer S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE MMEEarlyStatusTransfer

 PROCEDURE CODE id-MMEEarlyStatusTransfer

 CRITICALITY ignore

}

END

-- ASN1STOP

**<<<<<< NEXT CHANGE >>>>>>**

### 9.3.3 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for S1AP.

--

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

S1AP-PDU-Contents {

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

eps-Access (21) modules (3) s1ap (1) version1 (1) s1ap-PDU-Contents (1) }

<Unaffected part is omitted>

-- Paging

--

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

Paging ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{PagingIEs}},

 ...

}

PagingIEs S1AP-PROTOCOL-IES ::= {

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

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

 { ID id-pagingDRX CRITICALITY ignore TYPE PagingDRX PRESENCE optional}|

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

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

 { ID id-CSG-IdList CRITICALITY ignore TYPE CSG-IdList PRESENCE optional}|

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

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

-- Extension for Release 13 to support Paging Optimisation and Coverage Enhancement paging --

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

 { ID id-Paging-eDRXInformation CRITICALITY ignore TYPE Paging-eDRXInformation PRESENCE optional}|

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

 { ID id-NB-IoT-Paging-eDRXInformation CRITICALITY ignore TYPE NB-IoT-Paging-eDRXInformation PRESENCE optional}|

 { ID id-NB-IoT-UEIdentityIndexValue CRITICALITY ignore TYPE NB-IoT-UEIdentityIndexValue PRESENCE optional}|

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

 { ID id-CE-ModeBRestricted CRITICALITY ignore TYPE CE-ModeBRestricted PRESENCE optional}|

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

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

 { ID id-NB-IoT-PagingDRX CRITICALITY ignore TYPE NB-IoT-PagingDRX PRESENCE optional},

 ...

}

<Unaffected part is omitted>

UEContextReleaseComplete-IEs S1AP-PROTOCOL-IES ::= {

 { ID id-MME-UE-S1AP-ID CRITICALITY ignore TYPE MME-UE-S1AP-ID PRESENCE mandatory}|

 { ID id-eNB-UE-S1AP-ID CRITICALITY ignore TYPE ENB-UE-S1AP-ID PRESENCE mandatory}|

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

-- Extension for Release 12 to support User Location Information --

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

-- Extension for Release 13 to support Paging Optimisation

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

-- Extension for Release 13 to support coverage enhancement paging --

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

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

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

 ...

}

<Unaffected part is omitted>

UERadioCapabilityIDMappingResponseIEs S1AP-PROTOCOL-IES ::= {

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

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

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

 ...

}

END

-- ASN1STOP

**<<<<<< NEXT CHANGE >>>>>>**

### 9.3.4 Information Element Definitions

-- ASN1START

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

--

-- Information Element Definitions

--

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

S1AP-IEs {

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

eps-Access (21) modules (3) s1ap (1) version1 (1) s1ap-IEs (2) }

<Unaffected part is omitted>

EN-DCSONConfigurationTransfer ::= SEQUENCE {

 transfertype EN-DCSONTransferType,

 sONInformation SONInformation,

 x2TNLConfigInfo X2TNLConfigurationInfo OPTIONAL,

 -- This IE shall be present if the SON Information IE contains the SON Information Request IE and the SON Information Request IE is set to "X2TNL Configuration Info" --

 iE-Extensions ProtocolExtensionContainer { {EN-DCSONConfigurationTransfer-ExtIEs} } OPTIONAL,

...

}

<Unaffected part is omitted>

E-RABQoSParameters-ExtIEs S1AP-PROTOCOL-EXTENSION ::= {

-- Extended for introduction of downlink and uplink packet loss rate for enhanced Voice performance --

 { ID id-DownlinkPacketLossRate CRITICALITY ignore EXTENSION Packet-LossRate PRESENCE optional}|

 { ID id-UplinkPacketLossRate CRITICALITY ignore EXTENSION Packet-LossRate PRESENCE optional},

 ...

}

<Unaffected part is omitted>

M6Configuration ::= SEQUENCE {

 m6report-Interval M6report-Interval,

 m6delay-threshold M6delay-threshold OPTIONAL,

-- This IE shall be present if the M6 Links to log IE is set to "uplink" or to "both-uplink-and-downlink" --

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

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

 ...

}

<Unaffected part is omitted>

SONConfigurationTransfer-ExtIEs S1AP-PROTOCOL-EXTENSION ::= {

-- Extension for Release 10 to transfer the IP addresses of the eNB initiating the ANR action --

 {ID id-x2TNLConfigurationInfo CRITICALITY ignore EXTENSION X2TNLConfigurationInfo PRESENCE conditional

 -- This IE shall be present if the SON Information IE contains the SON Information Request IE and the SON Information Request IE is set to "X2TNL Configuration Info" --}|

-- Extension for Release 12 to transfer information concerning the source cell of synchronisation and the aggressor cell --

 {ID id-Synchronisation-Information CRITICALITY ignore EXTENSION SynchronisationInformation PRESENCE conditional

 -- This IE shall be present if the SON Information IE contains the SON Information Request IE set to " Activate Muting " --},

 ...

}

<Unaffected part is omitted>

TraceActivation-ExtIEs S1AP-PROTOCOL-EXTENSION ::= {

-- Extension for Rel-10 to support MDT --

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

-- Extension for Rel-15 to support QMC --

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

 { ID id-MDTConfigurationNR CRITICALITY ignore EXTENSION MDT-ConfigurationNR PRESENCE optional }|

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

 ...

}

<Unaffected part is omitted>

-- Y

-- Z

END

-- ASN1STOP

**<<<<<< NEXT CHANGE >>>>>>**

### 9.3.5 Common Definitions

-- ASN1START

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

--

-- Common definitions

--

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

S1AP-CommonDataTypes {

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

eps-Access (21) modules (3) s1ap (1) version1 (1) s1ap-CommonDataTypes (3) }

<Unaffected part is omitted>

TriggeringMessage ::= ENUMERATED { initiating-message, successful-outcome, unsuccessfull-outcome }

END

-- ASN1STOP

**<<<<<< NEXT CHANGE >>>>>>**

### 9.3.6 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

--

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

S1AP-Constants {

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

eps-Access (21) modules (3) s1ap (1) version1 (1) s1ap-Constants (4) }

<Unaffected part is omitted>

id-UERadioCapabilityForPaging-NR-Format ProtocolIE-ID ::= 327

END

-- ASN1STOP

**<<<<<< NEXT CHANGE >>>>>>**

### 9.3.7 Container Definitions

-- ASN1START

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

--

-- Container definitions

--

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

S1AP-Containers {

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

eps-Access (21) modules (3) s1ap (1) version1 (1) s1ap-Containers (5) }

<Unaffected part is omitted>

PrivateIE-Field {S1AP-PRIVATE-IES : IEsSetParam} ::= SEQUENCE {

 id S1AP-PRIVATE-IES.&id ({IEsSetParam}),

 criticality S1AP-PRIVATE-IES.&criticality ({IEsSetParam}{@id}),

 value S1AP-PRIVATE-IES.&Value ({IEsSetParam}{@id})

}

END

-- ASN1STOP

**<<<<<< NEXT CHANGE >>>>>>**

# B.2ASN.1 definition

-- ASN1START

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

--

-- IE definitions for the SON Transfer application

-- The IEs in this ASN.1 module shall be defined and encoded

-- using the same rules as applicable for the S1AP-IEs module.

--

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

SonTransfer-IEs

<Unaffected part is omitted>

maxnoofIRATReportingCells INTEGER ::= 128

maxnoofcandidateCells INTEGER ::= 16

maxnoofCellineNB INTEGER ::= 256

END

-- ASN1STOP

**<<<<<< END OF CHANGE >>>>>>**