**3GPP TSG-RAN3 Meeting #108-e *R3-20xxxx***

**E-Meeting, 01 – 11 June, 2020**

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| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **36.413** | **CR** | **1746** | **rev** | **5** | **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 | **x** |

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| --- |
|  |
| ***Title:***  | Signalling UE capability identity |
|  |  |
| ***Source to WG:*** | Huawei, Samsung Electronics, CATT, Ericsson, Qualcomm |
| ***Source to TSG:*** | RAN3 |
|  |  |
| ***Work item code:*** | RACS-RAN |  | ***Date:*** | 2020-05-21 |
|  |  |  |  |  |
| ***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:*** | *UE Radio Capability ID* IE and associated signalling are required to support RACS in S1AP.  |
|  |  |
| ***Summary of change:*** | **Rev 1:** Update based on the email discussion to capture the agreements. - Use the term “the UE Radio Capability ID IE”.- Inlcude the UE Radio Capability ID IE in the following S1/NG messages:* INITIAL CONTEXT SETUP REQUEST
* HANDOVER REUQUEST
* PATH SWITCH REQUEST ACKNOWLEDGEMENT
* UE CONTEXT MODIFICATION REQUEST

- Introduce the new UE Radio Capability ID Mapping Request procedure with the followings:* Non-UE associated and class 1 procedure
* the UE RADIO CAPABILITY ID MAPPING REQUEST and the UE RADIO CAPABILITY ID MAPPING RESPONSE messages

the title of the procedure and the message names are FFS |
|  |  |
| ***Consequences if not approved:*** | RACS would not be supported. The eNB node may be not able to obtain UE capability information. |
|  |  |
| ***Clauses affected:*** | 2, 8.1, 8.3.1.2, 8.3.4.2, 8.3.5, 8.4.2.2, 8.4.4, 8.6.2.2, 8.9, 8.x (new), 9.1.4.1, 9.1.4.8, 9.1.4.11, 9.1.5.4, 9.1.5.9, 9.1.7.2, 9.1.10, 9.1.y (new), 9.1.z (new), 9.3.2, 9.3.3, 9.3.4, 9.3.6 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 36.423 CR 1468 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev0: R3-200397Rev1: R3-201289Rev2: R3-201562 Update based on the latest specification version. Rev3: R3-202922 Include agreements from RAN3#107bis-e meeting (R3-202669).  Rev4: R3-203093 Resubmit to RAN3#108-e meetingRev5: R3-20xxxx Include agreements from RAN3#108-e meeting (R3-204146). |

START OF 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 36.401: "E-UTRAN Architecture Description".

[3] 3GPP TS 36.410: "S1 General Aspects and Principles".

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

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

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

[7] Void

[8] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".

[9] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC)".

[10] 3GPP TS 32.422: "Trace control and configuration management".

[11] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for E-UTRAN access".

[12] 3GPP TS 36.414: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 data transport".

[13] 3GPP TS 23.203: "Policy and charging control architecture"

[14] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA), Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".

[15] 3GPP TS 33.401: "Security architecture".

[16] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRAN); Radio Resource Control (RRC) Protocol Specification".

[17] 3GPP TS 23.272: "Circuit Switched Fallback in Evolved Packet System; Stage 2".

[18] 3GPP TS 48.018: "General Packet Radio Service (GPRS); BSS GPRS Protocol (BSSGP)".

[19] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[20] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA), User Equipment (UE) procedures in idle mode".

[21] 3GPP TS 23.003: "Technical Specification Group Core Network and Terminals; Numbering, addressing and identification".

[22] 3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)".

[23] 3GPP TS 48.008: "Mobile Switching Centre-Base Station System (MSC-BSS) interface; Layer 3 specification".

[24] 3GPP TS 24.301: "Non-Access Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".

[25] 3GPP2 A.S0008-C: "Interoperability Specification (IOS) for High Rate Packet Data (HRPD) Radio Access Network Interfaces with Session Control in the Access Network".

[26] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures".

[27] 3GPP2 C.S0024-B: "cdma2000 High Rate Packet Data Air Interface Specification".

[28] 3GPP TS 22.220: "Service requirements for Home Node Bs and Home eNode Bs".

[29] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[30] 3GPP TS 48.016: "General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) interface; Network service".

[31] 3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT);Overall description; Stage 2".

[32] 3GPP TS 29.281: "General Packet Radio Service (GPRS); Tunnelling Protocol User Plane (GTPv1-U)".

[33] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[34] 3GPP TS 36.455: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa)".

[35] 3GPP TS 29.060: "GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface".

[36] 3GPP TS 29.274: "Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[37] 3GPP TS 23.139: "3GPP system – fixed broadband access network interworking".

[38] 3GPP TS 23.007: "Technical Specification Group Core Network Terminals; Restoration procedures".

[39] 3GPP TS 36.104: "Base Station (BS) radio transmission and reception".

[40] 3GPP TR 25.921 (version.7.0.0): "Guidelines and principles for protocol description and error handling".

[41] 3GPP TS 36.306: "User Equipment (UE) radio access capabilities".

[42] IETF RFC 5905 (2010-06): "Network Time Protocol Version 4: Protocol and Algorithms Specification".

[43] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH)".

[44] 3GPP TS 38.413: "NG Radio Access Network (NG-RAN); NG Application Protocol (NGAP)".

[45] 3GPP TS 38.300: "NR; Overall description; Stage-2".

[46] 3GPP TS 23.501: "System Architecture for the 5G System".

[47] 3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage-2".

[b] 3GPP TS 38.331: "NG-RAN; Radio Resource Control (RRC) Protocol Specification".

NEXT CHANGE

8.1 List of S1AP Elementary procedures

In the following tables, all EPs are divided into Class 1 and Class 2 EPs (see subclause 3.1 for explanation of the different classes):

**Table 1: Class 1 procedures**

|  |  |  |  |
| --- | --- | --- | --- |
| **Elementary Procedure** | **Initiating Message** | **Successful Outcome** | **Unsuccessful Outcome** |
| **Response message** | **Response message** |
| Handover Preparation | HANDOVER REQUIRED | HANDOVER COMMAND | HANDOVER PREPARATION FAILURE |
| Handover Resource Allocation | HANDOVER REQUEST | HANDOVER REQUEST ACKNOWLEDGE | HANDOVER FAILURE |
| Path Switch Request | PATH SWITCH REQUEST | PATH SWITCH REQUEST ACKNOWLEDGE | PATH SWITCH REQUEST FAILURE |
| Handover Cancellation | HANDOVER CANCEL | HANDOVER CANCEL ACKNOWLEDGE |  |
| E-RAB Setup | E-RAB SETUP REQUEST | E-RAB SETUP RESPONSE |  |
| E-RAB Modify | E-RAB MODIFY REQUEST | E-RAB MODIFY RESPONSE |  |
| E-RAB Modification Indication | E-RAB MODIFICATION INDICATION | E-RAB MODIFICATION CONFIRM |  |
| E-RAB Release | E-RAB RELEASE COMMAND | E-RAB RELEASE RESPONSE |  |
| Initial Context Setup | INITIAL CONTEXT SETUP REQUEST | INITIAL CONTEXT SETUP RESPONSE | INITIAL CONTEXT SETUP FAILURE |
| Reset | RESET | RESET ACKNOWLEDGE |  |
| S1 Setup | S1 SETUP REQUEST | S1 SETUP RESPONSE | S1 SETUP FAILURE |
| UE Context Release | UE CONTEXT RELEASE COMMAND | UE CONTEXT RELEASE COMPLETE |  |
| UE Context Modification | UE CONTEXT MODIFICATION REQUEST | UE CONTEXT MODIFICATION RESPONSE | UE CONTEXT MODIFICATION FAILURE |
| eNB Configuration Update | ENB CONFIGURATION UPDATE | ENB CONFIGURATION UPDATE ACKNOWLEDGE | ENB CONFIGURATION UPDATE FAILURE |
| MME Configuration Update | MME CONFIGURATION UPDATE | MME CONFIGURAION UPDATE ACKNOWLEDGE | MME CONFIGURATION UPDATE FAILURE |
| Write-Replace Warning  | WRITE-REPLACE WARNING REQUEST | WRITE-REPLACE WARNING RESPONSE |  |
| Kill | KILL REQUEST | KILL RESPONSE |  |
| UE Radio Capability Match | UE RADIO CAPABILITY MATCH REQUEST | UE RADIO CAPABILITY MATCH RESPONSE |  |
| UE Context Modification Indication | UE CONTEXT MODIFICATION INDICATION | UE CONTEXT MODIFICATION CONFIRM |  |
| UE Context Suspend | UE CONTEXT SUSPEND REQUEST | UE CONTEXT SUSPEND RESPONSE |  |
| UE Context Resume | UE CONTEXT RESUME REQUEST | UE CONTEXT RESUME RESPONSE | UE CONTEXT RESUME FAILURE |
| UE Radio Capability ID Mapping | UE RADIO CAPABILITY ID MAPPING REQUEST | UE RADIO CAPABILITY ID MAPPING RESPONSE |  |

NEXT CHANGE

8.3.1 Initial Context Setup

8.3.1.1 General

The purpose of the Initial Context Setup procedure is to establish the necessary overall initial UE Context including E-RAB context, the Security Key, Handover Restriction List, UE Radio capability and UE Security Capabilities etc. The procedure uses UE-associated signalling.

8.3.1.2 Successful Operation

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**Figure 8.3.1.2-1: Initial Context Setup procedure. Successful operation.**

In case of the establishment of an E-RAB the EPC must be prepared to receive user data before the INITIAL CONTEXT SETUP RESPONSE message has been received by the MME. If no UE-associated logical S1-connection exists, the UE-associated logical S1-connection shall be established at reception of the INITIAL CONTEXT SETUP REQUEST message.

The INITIAL CONTEXT SETUP REQUEST message shall contain within the *E-RAB to be Setup List* IE the information required by the eNB to build the new E-RAB configuration consisting of at least one additional E-RAB.

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

If the *Aerial UE subscription information* IE is included in the INITIAL CONTEXT SETUP REQUEST message, the eNB shall, if supported, store this information in the UE context and use it as defined in TS 36.300 [14].

If the *Pending Data Indication* IE is included in the INITIAL CONTEXT SETUP REQUEST message, the eNB shall use it as defined in TS 23.401 [11].

If the *Subscription Based UE Differentiation Information* IE is included in the INITIAL CONTEXT SETUP REQUEST message, the eNB shall, if supported, store this information in the UE context for further use according to TS 23.401 [11].

If the *UE Radio Capability ID* IE is included in the INITIAL CONTEXT SETUP REQUEST message, the eNB shall, if supported, use it as defined in TS 23.401 [11].

The eNB shall report to the MME, in the INITIAL CONTEXT SETUP RESPONSE message, the successful establishment of the security procedures with the UE, and, the result for all the requested E-RABs in the following way:

- A list of E-RABs which are successfully established shall be included in the *E-RAB Setup List* IE

- A list of E-RABs which failed to be established shall be included in the *E-RAB Failed to Setup List* IE.

When the eNB reports the unsuccessful establishment of an E-RAB, the cause value should be precise enough to enable the MME to know the reason for the unsuccessful establishment, e.g., “Radio resources not available”, “Failure in the Radio Interface Procedure”.

After sending the INITIAL CONTEXT SETUP RESPONSE message, the procedure is terminated in the eNB.

NEXT CHANGE

8.3.4 UE Context Modification

8.3.4.1 General

The purpose of the UE Context Modification procedure is to partly modify the established UE Context, e.g., with the Security Key or the Subscriber Profile ID for RAT/Frequency priority. The procedure uses UE-associated signalling.

8.3.4.2 Successful Operation

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**Figure 8.3.4.2-1: UE Context Modification procedure. Successful operation.**

The UE CONTEXT MODIFICATION REQUEST message may contain.

- the *Security Key* IE.

- the *Subscriber Profile ID for RAT/Frequency priority* IE.

- the *UE Aggregate Maximum Bit Rate* IE.

- the *CS Fallback Indicator* IE.

- the *UE Security Capabilities* IE.

- the *CSG Membership Status* IE.

- the *Registered LAI* IE.

- the *Additional CS Fallback Indicator* IE.

- the *ProSe Authorized* IE.

- the *SRVCC Operation Possible* IE.

- the *SRVCC Operation Not Possible* IE.

- the *V2X Services Authorized* IE.

- the *UE Sidelink Aggregate Maximum Bit Rate* IE.

- the *NR UE Security Capabilities* IE.

- the *Aerial UE subscription information* IE.

- the *UE Radio Capability ID* IE.

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

If the *Aerial UE subscription information* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the eNB shall, if supported, store this information in the UE context and use it as defined in TS 36.300 [14].

If the *UE Radio Capability ID* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the eNB shall, if supported, use it as defined in TS 23.401 [11].

The eNB shall report, in the UE CONTEXT MODIFICATION RESPONSE message to the MME the successful update of the UE context.

After sending the UE CONTEXT MODIFICATION RESPONSE message, the procedure is terminated in the eNB.

NEXT CHANGE

### 8.3.5 UE Radio Capability Match

#### 8.3.5.1 General

The purpose of the UE Radio Capability Match procedure is for the MME to request the eNB to derive and provide an indication to the MME whether the UE radio capabilities are compatible with the network configuration for voice continuity.

The procedure uses UE-associated signalling.

#### 8.3.5.2 Successful Operation



Figure 8.3.5.2-1: UE Radio Capability Match. Successful operation

The MME initiates the procedure by sending a UE RADIO CAPABILITY MATCH REQUEST message. If the UE-associated logical S1-connection is not established, the MME shall allocate a unique MME UE S1AP ID to be used for the UE and include the *MME UE S1AP ID* IE in the UE RADIO CAPABILITY MATCH REQUEST message; by receiving the *MME UE S1AP ID* IE in the UE RADIO CAPABILITY MATCH REQUEST message, the eNB establishes the UE-associated logical S1-connection.

Upon receipt of the UE RADIO CAPABILITY MATCH REQUEST message, the eNB shall act as defined in the TS 23.401 [11] and respond with a UE RADIO CAPABILITY MATCH RESPONSE message.

If the *UE Radio Capability* IE is contained in the UE RADIO CAPABILITY MATCH REQUEST message, the eNB shall use it to determine the value of the *Voice Support Match Indicator* IE to be included in the UE RADIO CAPABILITY MATCH RESPONSE message.

If the *UE Radio Capability ID* IE is included in the UE RADIO CAPABILITY MATCH REQUEST message, the eNB shall, if supported, use it as defined in TS 23.401 [11].

#### 8.3.5.3 Unsuccessful Operation

Not applicable.

#### 8.3.5.4 Abnormal Conditions

Not applicable.

NEXT CHANGE

8.4.2 Handover Resource Allocation

8.4.2.1 General

The purpose of the Handover Resource Allocation procedure is to reserve resources at the target eNB for the handover of a UE.

8.4.2.2 Successful Operation

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**Figure 8.4.2.2-1: Handover resource allocation: successful operation**

The MME initiates the procedure by sending the HANDOVER REQUEST message to the target eNB. The HANDOVER REQUEST message may contain the *Handover Restriction List* IE, which contains roaming or access restrictions.

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

If the *Subscription Based UE Differentiation Information* IE is included in the HANDOVER REQUEST message, the eNB shall, if supported, store this information in the UE context for further use according to TS 23.401 [11].

If the *Additional RRM Policy Index* IE is contained in the HANDOVER REQUEST message, the eNB shall, if supported, store it and use it as defined in TS 36.300 [14].

If the HANDOVER REQUEST message is received for an handover originating from a source NG-RAN node, the list of E-RABs contained in the source eNB to target eNB Transparent Container which are not included in the HANDOVER REQUEST message shall be considered as not to be handed over and ignored.

If the *UE Radio Capability ID* IE is included in the HANDOVER REQUEST message, the eNB shall, if supported, use it as defined in TS 23.401 [11].

START OF NEXT CHANGE

8.4.4 Path Switch Request

8.4.4.1 General

The purpose of the Path Switch Request procedure is to establish a UE associated signalling connection to the EPC and, if applicable, to request the switch of a downlink GTP tunnel towards a new GTP tunnel endpoint.

8.4.4.2 Successful Operation

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**Figure 8.4.4.2-1: Path switch request: successful operation**

The eNB initiates the procedure by sending the PATH SWITCH REQUEST message to the MME.

If the ‎*E-RAB To Be Switched in Downlink List* IE in the PATH SWITCH REQUEST message does not include all E-RABs previously included in the UE Context, the MME shall consider the non included E-RABs as implicitly released by the eNB.

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

If the *Subscription Based UE Differentiation Information* IE is included in the PATH SWITCH REQUEST ACKNOWLEDGE message, the eNB shall, if supported, store this information in the UE context for further use according to TS 23.401 [11].

If the *Handover Restriction List* IE is contained in the PATH SWITCH REQUEST ACKNOWLEDGE message, the eNB shall, if supported, overwrite any previously stored handover restriction information in the UE context and use the information in the *Handover Restriction List* IE to:

- determine a target for subsequent mobility action for which the eNB provides information about the target of the mobility action towards the UE;

- select a proper SCG during dual connectivity operation;

The PATH SWITCH REQUEST ACKNOWLEDGE message may contain the *Additional RRM Policy Index* IE, if available in the MME for cases specified in TS 23.401 [11]. The eNB shall, if supported, store it and use it as specified in TS 36.300 [14].

If the *UE Radio Capability ID* IE is included in the PATH SWITCH REQUEST ACKNOWLEDGE message, the eNB shall, if supported, use it as defined in TS 23.401 [11].

If the UE is configured with EN-DC radio resources and the PSCell information is available, the *PSCell Information* IE shall be included in the PATH SWITCH REQUEST message.

NEXT CHANGE

#### 8.6.2.2 DOWNLINK NAS TRANSPORT



Figure 8.6.2.2-1: DOWNLINK NAS Transport Procedure

If the MME only needs to send a NAS message transparently via the eNB to the UE and a UE-associated logical S1-connection exists for the UE or if the MME has received the *eNB UE S1AP ID* IE in an INITIAL UE MESSAGE message, the MME shall send a DOWNLINK NAS TRANSPORT message to the eNB including the NAS message as a *NAS-PDU* IE. If the UE-associated logical S1-connection is not established, the MME shall allocate a unique MME UE S1AP ID to be used for the UE and include that in the DOWNLINK NAS TRANSPORT message; by receiving the *MME UE S1AP ID* IE in the DOWNLINK NAS TRANSPORT, the eNB establishes the UE-associated logical S1-connection.

The *NAS-PDU* IE contains an MME – UE message that is transferred without interpretation in the eNB.

The DOWNLINK NAS TRANSPORT message may contain the *Handover Restriction List* IE, which may contain roaming or access restrictions.

If the *Handover Restriction List* IE is contained in the DOWNLINK NAS TRANSPORT message, the eNB shall store this information in the UE context.

The eNB shall use the information in *Handover Restriction List* IE if present in the DOWNLINK NAS TRANSPORT message to:

- determine a target for subsequent mobility action for which the eNB provides information about the target of the mobility action towards the UE;

- select a proper SCG during dual connectivity operation.

If the *Handover Restriction List* IE is not contained in the DOWNLINK NAS TRANSPORT message and there is no previously stored Handover restriction information, the eNB shall consider that no roaming and no access restriction apply to the UE.

If the *Subscriber Profile ID for RAT/Frequency priority* IE is included in DOWNLINK NAS TRANSPORT message, the eNB shall, if supported, use it as defined in TS 36.300 [14].

If the *Additional RRM Policy Index* IE is included in DOWNLINK NAS TRANSPORT message, the eNB shall, if supported, use it as defined in TS 36.300 [14].

If the *SRVCC Operation Possible* IE is included in DOWNLINK NAS TRANSPORT message, the eNB shall store it in the UE context and, if supported, use it as defined in TS 23.216 [9].

If the *UE Radio Capability* IE is included in the DOWNLINK NAS TRANSPORT message, the eNB shall store this information in the UE context, use it as defined in TS 36.300 [14].

If the *Enhanced Coverage Restricted* IE is included in the DOWNLINK NAS TRANSPORT message, the eNB shall store this information in the UE context and use it as defined in TS 23.401 [11].

If the *CE-Mode-B Restricted* IE is included in the DOWNLINK NAS TRANSPORT message and the *Enhanced Coverage Restricted* IE is not set to *restricted* and the Enhanced Coverage Restricted information stored in the UE context is not set to *restricted*, the eNB shall store this information in the UE context and use it as defined in TS 23.401 [11].

If the *NR UE Security Capabilities* IE is included in the DOWNLINK NAS TRANSPORT message, the eNB shall, if supported, store this information in the UE context and use it as defined in TS 33.401 [15].

If the *End Indication* IE is included in the DOWNLINK NAS TRANSPORT message and set to "no further data", the eNB shall consider that besides the included NAS PDU in this message, there are no further NAS PDUs to be transmitted for this UE.

If the *Pending Data Indication* IE is included in the DOWNLINK NAS TRANSPORT message, the eNB shall use it as defined in TS 23.401 [11].

If the *Subscription Based UE Differentiation Information* IE is included in the DOWNLINK NAS TRANSPORT message, the eNB shall, if supported, store this information in the UE context for further use according to TS 23.401 [11].

If the *UE Radio Capability ID* IE is included in the DOWNLINK NAS TRANSPORT message, the eNB shall, if supported, use it as defined in TS 23.401 [11].

**Interaction with the NAS Delivery Indication procedure:**

If the *DL NAS PDU Delivery Acknowledgment Request* IE set to "requested" was included in the DOWNLINK NAS TRANSPORT message (see 23.401 [11]), the eNB shall trigger the NAS Delivery Indication procedure, if the downlink NAS PDU was successfully delivered to the UE.

**Interaction with the UE Capability Info Indication procedure:**

If the *UE Capability Info Request* IE set to “requested” is included in the DOWNLINK NAS TRANSPORT message, the eNB shall trigger the UE Capability Info Indication procedure if UE capability related information was successfully retrieved from the UE.

NEXT CHANGE

## 8.9 UE Capability Info Indication

### 8.9.1 General

The purpose of the UE Capability Info Indication procedure is to enable the eNB to provide to the MME UE capability-related information.

### 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, 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 thie 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].

NEXT CHANGE

8.x UE Radio Capability ID Mapping

8.x.1 General

The purpose of the UE Radio Capability ID Mapping procedure is to enable the eNB to request the MME to provide the UE Radio Capability information that maps to a specific UE Radio Capability ID. The procedure uses non UE-associated signalling.

8.x.2 Successful Operation

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**Figure 8.x.2-1: UE Radio Capability ID mapping Request procedure. Successful operation.**

The eNB initiates the procedure by sending a UE RADIO CAPABILITY ID MAPPING REQUEST message to the MME.

Upon receipt of the UE RADIO CAPABILITY ID MAPPING REQUEST message, the MME shall include the UE Radio Capability information that maps to the UE Radio Capability ID indicated in the UE RADIO CAPABILITY ID MAPPING REQUEST message in the UE RADIO CAPABILITY ID MAPPING RESPONSE message.

8.x.3 Unsuccessful Operation

Not applicable.

8.x.4 Abnormal Conditions

Void.

NEXT CHANGE

9.1.4.1 INITIAL CONTEXT SETUP REQUEST

This message is sent by the MME to request the setup of a UE context.

Direction: MME → eNB

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| UE Aggregate Maximum Bit Rate | M |  | 9.2.1.20 |  | YES | reject |
| **E-RAB to Be Setup List** |  | *1* |  |  | YES | reject |
| **>E-RAB to Be Setup Item IEs** |  | *1 .. <maxnoofE-RABs>* |  |  | EACH | reject |
| >>E-RAB ID | M |  | 9.2.1.2 |  | - |  |
| >>E-RAB Level QoS Parameters | M |  | 9.2.1.15 | Includes necessary QoS parameters. | - |  |
| >>Transport Layer Address | M |  | 9.2.2.1 |  | - |  |
| >>GTP-TEID | M |  | 9.2.2.2 |  | - |  |
| >>NAS-PDU | O |  | 9.2.3.5 |  | - |  |
| >>Correlation ID | O |  | 9.2.1.80 |  | YES | ignore |
| >>SIPTO Correlation ID | O |  | Correlation ID9.2.1.80 |  | YES | ignore |
| >>Bearer Type | O |  | 9.2.1.116 |  | YES | reject |
| UE Security Capabilities | M |  | 9.2.1.40 |  | YES | reject |
| Security Key | M |  | 9.2.1.41 | The KeNB is provided after the key-generation in the MME, see TS 33.401 [15]. | YES | reject |
| Trace Activation | O |  | 9.2.1.4 |  | YES | ignore |
| Handover Restriction List | O |  | 9.2.1.22 |  | YES | ignore |
| UE Radio Capability | O |  | 9.2.1.27 |  | YES | ignore |
| Subscriber Profile ID for RAT/Frequency priority | O |  | 9.2.1.39 |  | YES | ignore |
| CS Fallback Indicator | O |  | 9.2.3.21 |  | YES | reject |
| SRVCC Operation Possible | O |  | 9.2.1.58 |  | YES | ignore |
| CSG Membership Status | O |  | 9.2.1.73 |  | YES | ignore |
| Registered LAI | O |  | 9.2.3.1 |  | YES | ignore |
| GUMMEI | O |  | 9.2.3.9 | This IE indicates the MME serving the UE. | YES | ignore |
| MME UE S1AP ID 2 | O |  | 9.2.3.3 | This IE indicates the MME UE S1AP ID assigned by the MME. | YES | ignore |
| Management Based MDT Allowed | O |  | 9.2.1.83 |  | YES | ignore |
| Management Based MDT PLMN List | O |  | MDT PLMN List9.2.1.89 |  | YES | ignore |
| Additional CS Fallback Indicator | C-ifCSFBhighpriority |  | 9.2.3.37 |  | YES | ignore |
| Masked IMEISV | O |  | 9.2.3.38 |  | YES | ignore |
| Expected UE Behaviour | O |  | 9.2.1.96 |  | YES | ignore |
| ProSe Authorized | O |  | 9.2.1.99 |  | YES | ignore |
| UE User Plane CIoT Support Indicator | O |  | 9.2.1.113 |  | YES | ignore |
| V2X Services Authorized | O |  | 9.2.1.120 |  | YES | ignore |
| UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.1.122 | This IE applies only if the UE is authorized for V2X services. | YES | ignore |
| Enhanced Coverage Restricted | O |  | 9.2.1.123 |  | YES | ignore |
| NR UE Security Capabilities | O |  | 9.2.1.127 |  | YES | ignore |
| CE-mode-B Restricted | O |  | 9.2.1.129 |  | YES | ignore |
| Aerial UE subscription information | O |  | 9.2.1.136 |  | YES | ignore |
| Pending Data Indication | O |  | 9.2.3.55 |  | YES | ignore |
| Subscription Based UE Differentiation Information | O |  | 9.2.1.140 |  | YES | ignore |
| Additional RRM Policy Index | O |  | 9.2.1.39a |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.2.1.a |  | YES | reject |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofE-RABs | Maximum no. of E-RAB allowed towards one UE, the maximum value is 256.  |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifCSFBhighpriority | This IE shall be present if the *CS Fallback Indicator* IE is set to “CS Fallback High Priority”. |

NEXT CHANGE

9.1.4.8 UE CONTEXT MODIFICATION REQUEST

This message is sent by the MME to provide UE Context information changes to the eNB.

Direction: MME → eNB

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| Security Key | O |  | 9.2.1.41 | A fresh KeNB is provided after performing a key-change on the fly procedure in the MME, see TS 33.401 [15]. | YES | reject |
| Subscriber Profile ID for RAT/Frequency priority | O |  | 9.2.1.39 |  | YES | ignore |
| UE Aggregate Maximum Bit Rate | O |  | 9.2.1.20 |  | YES | ignore |
| CS Fallback Indicator | O |  | 9.2.3.21 |  | YES | reject |
| UE Security Capabilities | O |  | 9.2.1.40 |  | YES | reject |
| CSG Membership Status | O |  | 9.2.1.73 |  | YES | ignore |
| Registered LAI | O |  | 9.2.3.1 |  | YES | ignore |
| Additional CS Fallback Indicator | C-ifCSFBhighpriority |  | 9.2.3.37 |  | YES | ignore |
| ProSe Authorized | O |  | 9.2.1.99 |  | YES | ignore |
| SRVCC Operation Possible | O |  | 9.2.1.58 |  | YES | ignore |
| SRVCC Operation Not Possible | O |  | 9.2.1.119 |  | YES | ignore |
| V2X Services Authorized | O |  | 9.2.1.120 |  | YES | ignore |
| UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.1.122 | This IE applies only if the UE is authorized for V2X services. | YES | ignore |
| NR UE Security Capabilities | O |  | 9.2.1.127 |  | YES | ignore |
| Aerial UE subscription information | O |  | 9.2.1.136 |  | YES | ignore |
| Additional RRM Policy Index | O |  | 9.2.1.39a |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.2.1.a |  | YES | reject |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifCSFBhighpriority | This IE shall be present if the *CS Fallback Indicator* IE is set to “CS Fallback High Priority”. |

NEXT CHANGE

#### 9.1.4.11 UE RADIO CAPABILITY MATCH REQUEST

This message is sent by the MME to request the compatibility between the UE radio capabilities and network configuration.

Direction: MME → eNB

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| UE Radio Capability | O |  | 9.2.1.27 |  | YES | Ignore |
| UE Radio Capability ID | O |  | 9.2.1.a |  | YES | reject |

NEXT CHANGE

#### 9.1.5.4 HANDOVER REQUEST

This message is sent by the MME to the target eNB to request the preparation of resources.

Direction: MME → eNB.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| Handover Type | M |  | 9.2.1.13 |  | YES | reject |
| Cause | M |  | 9.2.1.3 |  | YES | ignore |
| UE Aggregate Maximum Bit Rate | M |  | 9.2.1.20 |  | YES | reject |
| **E-RABs To Be Setup List** |  | *1* |  |  | YES | reject |
| **>E-RABs To Be Setup Item IEs** |  | *1 .. <maxnoofE-RABs>* |  |  | EACH | reject |
| >>E-RAB ID  | M |  | 9.2.1.2 |  | - |  |
| >>Transport Layer Address | M |  | 9.2.2.1 |  | - |  |
| >>GTP-TEID | M |  | 9.2.2.2 | To deliver UL PDUs. | - |  |
| >>E-RAB Level QoS Parameters | M |  | 9.2.1.15 | Includes necessary QoS parameters. | - |  |
| >>Data Forwarding Not Possible | O |  | 9.2.1.76 |  | YES | ignore |
| >>Bearer Type | O |  | 9.2.1.116 |  | YES | reject |
| Source to Target Transparent Container | M |  | 9.2.1.56 |  | YES | reject |
| UE Security Capabilities | M |  | 9.2.1.40 |  | YES | reject |
| Handover Restriction List | O |  | 9.2.1.22 |  | YES | ignore |
| Trace Activation | O |  | 9.2.1.4 |  | YES | ignore |
| Request Type | O |  | 9.2.1.34 |  | YES | ignore |
| SRVCC Operation Possible | O |  | 9.2.1.58 |  | YES | ignore |
| Security Context | M |  | 9.2.1.26 |  | YES | reject |
| NAS Security Parameters to E-UTRAN | C-iffromUTRANGERAN |  | 9.2.3.31 | The eNB shall use this IE as specified in TS 33.401 [15]. | YES | reject |
| CSG Id | O |  | 9.2.1.62 |  | YES | reject |
| CSG Membership Status | O |  | 9.2.1.73 |  | YES | ignore |
| GUMMEI | O |  | 9.2.3.9 | This IE indicates the MME serving the UE. | YES | ignore |
| MME UE S1AP ID 2 | O |  | 9.2.3.3 | This IE indicates the MME UE S1AP ID assigned by the MME. | YES | ignore |
| Management Based MDT Allowed | O |  | 9.2.1.83 |  | YES | ignore |
| Management Based MDT PLMN List | O |  | MDT PLMN List9.2.1.89 |  | YES | ignore |
| Masked IMEISV | O |  | 9.2.3.38 |  | YES | ignore |
| Expected UE Behaviour | O |  | 9.2.1.96 |  | YES | ignore |
| ProSe Authorized | O |  | 9.2.1.99 |  | YES | ignore |
| UE User Plane CIoT Support Indicator | O |  | 9.2.1.113 |  | YES | ignore |
| V2X Services Authorized | O |  | 9.2.1.120 |  | YES | ignore |
| UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.1.122 | This IE applies only if the UE is authorized for V2X services. | YES | ignore |
| Enhanced Coverage Restricted | O |  | 9.2.1.123 |  | YES | ignore |
| NR UE Security Capabilities | O |  | 9.2.1.127 |  | YES | ignore |
| CE-mode-B Restricted | O |  | 9.2.1.129 |  | YES | ignore |
| Aerial UE subscription information | O |  | 9.2.1.136 |  | YES | ignore |
| Pending Data Indication | O |  | 9.2.3.55 |  | YES | ignore |
| Subscription Based UE Differentiation Information | O |  | 9.2.1.140 |  | YES | ignore |
| Additional RRM Policy Index | O |  | 9.2.1.39a |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.2.1.a |  | YES | reject |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| C-iffromUTRANGERAN | This IE shall be present if the Handover Type IE is set to the value “UTRANtoLTE” or “GERANtoLTE”. |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofE-RABs | Maximum no. of E-RABs for one UE. Value is 256. |

NEXT CHANGE

9.1.5.9 PATH SWITCH REQUEST ACKNOWLEDGE

This message is sent by the MME to inform the eNB that the path switch has been successfully completed in the EPC.

Direction: MME → eNB.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | ignore |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | ignore |
| UE Aggregate Maximum Bit Rate | O |  | 9.2.1.20 |  | YES | ignore |
| **E-RAB To Be Switched in Uplink List** |  | *0..1* |  |  | YES | ignore |
| **>E-RABs Switched in Uplink Item IEs** |  | *1 .. <maxnoofE-RABs>* |  |  | EACH | ignore |
| >>E-RAB ID | M |  | 9.2.1.2 |  | - |  |
| >>Transport Layer Address | M |  | 9.2.2.1 |  | - |  |
| >>GTP-TEID | M |  | 9.2.2.2 |  | - |  |
| E-RAB To Be Released List | O |  | E-RAB List 9.2.1.36 | A value for *E-RAB ID* shall only be present once in *E-RAB To Be Switched in Uplink List* IE and *E-RAB to Be Released List* IE. | YES | ignore |
| Security Context | M |  | 9.2.1.26 | One pair of {NCC, NH} is provided. | YES | reject |
| Criticality Diagnostics | O |  | 9.2.1.21 |  | YES | ignore |
| MME UE S1AP ID 2 | O |  | 9.2.3.3 | This IE indicates the MME UE S1AP ID assigned by the MME. | YES | ignore |
| CSG Membership Status | O |  | 9.2.1.73 |  | YES | ignore |
| ProSe Authorized | O |  | 9.2.1.99 |  | YES | ignore |
| UE User Plane CIoT Support Indicator | O |  | 9.2.1.113 |  | YES | ignore |
| V2X Services Authorized | O |  | 9.2.1.120 |  | YES | ignore |
| UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.1.122 | This IE applies only if the UE is authorized for V2X services. | YES | ignore |
| Enhanced Coverage Restricted | O |  | 9.2.1.123 |  | YES | ignore |
| NR UE Security Capabilities | O |  | 9.2.1.127 |  | YES | ignore |
| CE-mode-B Restricted | O |  | 9.2.1.129 |  | YES | ignore |
| Aerial UE subscription information | O |  | 9.2.1.136 |  | YES | ignore |
| Pending Data Indication | O |  | 9.2.3.55 |  | YES | ignore |
| Subscription Based UE Differentiation Information | O |  | 9.2.1.140 |  | YES | ignore |
| Handover Restriction List | O |  | 9.2.1.22 |  | YES | ignore |
| Additional RRM Policy Index | O |  | 9.2.1.39a |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.2.1.a |  | YES | reject |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofE-RABs | Maximum no. of E-RABs for one UE. Value is 256. |

NEXT CHANGE

#### 9.1.7.2 DOWNLINK NAS TRANSPORT

This message is sent by the MME and is used for carrying NAS information over the S1 interface.

Direction: MME → eNB

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.1.1 |  | YES | ignore |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| NAS-PDU | M |  | 9.2.3.5 |  | YES | reject |
| Handover Restriction List | O |  | 9.2.1.22 |  | YES | ignore |
| Subscriber Profile ID for RAT/Frequency priority | O |  | 9.2.1.39 |  | YES | ignore |
| SRVCC Operation Possible | O |  | 9.2.1.58 |  | YES | ignore |
| UE Radio Capability | O |  | 9.2.1.27 |  | YES | ignore |
| DL NAS PDU Delivery Acknowledgment Request  | O |  | 9.2.3.48 |  | YES | ignore |
| Enhanced Coverage Restricted | O |  | 9.2.1.123 |  | YES | ignore |
| CE-mode-B Restricted | O |  | 9.2.1.129 |  | YES | ignore |
| NR UE Security Capabilities | O |  | 9.2.1.127 |  | YES | ignore |
| UE Capability Info Request | O |  | 9.2.3.51 |  | YES | ignore |
| End Indication | O |  | 9.2.3.54 |  | YES | ignore |
| Pending Data Indication | O |  | 9.2.3.55 |  | YES | ignore |
| Subscription Based UE Differentiation Information | O |  | 9.2.1.140 |  | YES | ignore |
| Additional RRM Policy Index | O |  | 9.2.1.39a |  | YES | Ignore |
| UE Radio Capability ID | O |  | 9.2.1.a |  | YES | reject |

NEXT CHANGE

### 9.1.10 UE CAPABILITY INFO INDICATION

This message is sent by the eNB to provide UE Radio Capability information to the MME.

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 |
| MME UE S1AP ID | M |  | 9.2.3.3 |  | YES | reject |
| eNB UE S1AP ID | M |  | 9.2.3.4 |  | YES | reject |
| UE Radio Capability | M |  | 9.2.1.27 |  | YES | ignore |
| UE Radio Capability for Paging | O |  | 9.2.1.98 |  | 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 25.331[10].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 |
| LTE-M Indication | O |  | 9.2.1.135 |  | YES | ignore |
| UE Radio Capability – NR Format | O |  | 9.2.1.b |  | YES | ignore |

NEXT CHANGE

9.1.y UE Radio Capability ID Mapping Request

This message is sent by the eNB and is used to request the UE Radio Capability information that maps to a specific UE Radio Capability ID.

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 | reject |
| UE Radio Capability ID | M |  | 9.2.1.a |  | YES | reject |

9.1.z UE Radio Capability ID Mapping Response

This message is sent by the MME and is used to provide the UE Radio Capability information that maps to a specific UE Radio Capability ID indicated in the UE RADIO CAPABILITY ID MAPPING REQUEST message.

Direction: MME → eNB.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.1.1 |  | YES | reject |
| UE Radio Capability ID | M |  | 9.2.1.a |  | YES | reject |
| UE Radio Capability | M |  | 9.2.1.27 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.2.1.21 |  | YES | ignore |

NEXT CHANGE

9.2.1.a UE Radio Capability ID

This IE contains UE Radio Capability ID.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** |
| UE Radio Capability ID | M |  | OCTET STRING | Defined in TS 23.003 [21].  |

9.2.1.b UE Radio Capability – NR Format

This IE contains UE Radio Capability information format encoded as specified in TS 38.331 [b] in order to support Mode of operation A as specified in TS 23.401 [11].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** |
| UE Radio Capability – NR Format | M |  | OCTET STRING | Includes *UERadioAccessCapabilityInformation* message as defined in TS 38.331 [b]. |

START OF NEXT CHANGE

9.3.2 Elementary Procedure Definitions

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

--

-- 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)}

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

 Criticality,

 ProcedureCode

FROM S1AP-CommonDataTypes

 CellTrafficTrace,

 DeactivateTrace,

 DownlinkUEAssociatedLPPaTransport,

 DownlinkNASTransport,

 DownlinkNonUEAssociatedLPPaTransport,

 DownlinkS1cdma2000tunnelling,

 <<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

 UEContextModificationIndication,

 UEContextModificationConfirm,

 RerouteNASRequest,

 PWSFailureIndication,

 UEContextSuspendRequest,

 UEContextSuspendResponse,

 UEContextResumeRequest,

 UEContextResumeResponse,

 UEContextResumeFailure,

 ConnectionEstablishmentIndication,

 NASDeliveryIndication,

 RetrieveUEInformation,

 UEInformationTransfer,

 ENBCPRelocationIndication,

 MMECPRelocationIndication,

 SecondaryRATDataUsageReport,

 UERadioCapabilityIDMappingRequest,

 UERadioCapabilityIDMappingResponse

FROM S1AP-PDU-Contents

 id-CellTrafficTrace,

 id-DeactivateTrace,

 id-downlinkUEAssociatedLPPaTransport,

 id-downlinkNASTransport,

 id-downlinkNonUEAssociatedLPPaTransport,

 id-DownlinkS1cdma2000tunnelling,

 id-eNBStatusTransfer,

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

 id-eNBCPRelocationIndication,

 id-MMECPRelocationIndication,

 id-SecondaryRATDataUsageReport,

 id-UERadioCapabilityIDMapping

FROM S1AP-Constants;

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

--

-- Interface Elementary Procedure Class

--

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

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

S1AP-ELEMENTARY-PROCEDURES-CLASS-1 S1AP-ELEMENTARY-PROCEDURE ::= {

 handoverPreparation |

 handoverResourceAllocation |

 pathSwitchRequest |

 e-RABSetup |

 e-RABModify |

 e-RABRelease |

 initialContextSetup |

 handoverCancel |

 kill |

 reset |

 s1Setup |

 uEContextModification |

 uEContextRelease |

 eNBConfigurationUpdate |

 mMEConfigurationUpdate |

 writeReplaceWarning ,

 ...,

 uERadioCapabilityMatch |

 e-RABModificationIndication |

 uEContextModificationIndication |

 uEContextSuspend |

 uEContextResume |

 uERadioCapabilityIDMapping

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

-- Interface Elementary Procedures

--

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

handoverPreparation S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE HandoverRequired

 SUCCESSFUL OUTCOME HandoverCommand

 UNSUCCESSFUL OUTCOME HandoverPreparationFailure

 PROCEDURE CODE id-HandoverPreparation

 CRITICALITY reject

}

handoverResourceAllocation S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE HandoverRequest

 SUCCESSFUL OUTCOME HandoverRequestAcknowledge

 UNSUCCESSFUL OUTCOME HandoverFailure

 PROCEDURE CODE id-HandoverResourceAllocation

 CRITICALITY reject

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

uEInformationTransfer S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE UEInformationTransfer

 PROCEDURE CODE id-UEInformationTransfer

 CRITICALITY reject

}

eNBCPRelocationIndication S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE ENBCPRelocationIndication

 PROCEDURE CODE id-eNBCPRelocationIndication

 CRITICALITY reject

}

mMECPRelocationIndication S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE MMECPRelocationIndication

 PROCEDURE CODE id-MMECPRelocationIndication

 CRITICALITY reject

}

secondaryRATDataUsageReport S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE SecondaryRATDataUsageReport

 PROCEDURE CODE id-SecondaryRATDataUsageReport

 CRITICALITY ignore

}

uERadioCapabilityIDMapping S1AP-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE UERadioCapabilityIDMappingRequest

 SUCCESSFUL OUTCOME UERadioCapabilityIDMappingResponse

 PROCEDURE CODE id-UERadioCapabilityIDMapping

 CRITICALITY reject

}

END

NEXT CHANGE

9.3.3 PDU Definitions

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

--

-- 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) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

 WarningAreaCoordinates,

 Subscription-Based-UE-DifferentiationInfo,

 PSCellInformation,

 NR-CGI,

 ConnectedengNBList,

 EN-DCSONConfigurationTransfer,

 TimeSinceSecondaryNodeRelease,

 AdditionalRRMPriorityIndex,

 UERadioCapabilityID

FROM S1AP-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

 ProtocolIE-ContainerList{},

 ProtocolIE-ContainerPair{},

 ProtocolIE-ContainerPairList{},

 ProtocolIE-SingleContainer{},

 S1AP-PRIVATE-IES,

 S1AP-PROTOCOL-EXTENSION,

 S1AP-PROTOCOL-IES,

 S1AP-PROTOCOL-IES-PAIR

FROM S1AP-Containers

 id-AssistanceDataForPaging,

 id-AerialUEsubscriptionInformation,

 id-uEaggregateMaximumBitrate,

 id-BearerType,

 id-Cause,

 id-CellAccessMode,

 id-CellIdentifierAndCELevelForCECapableUEs,

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

 id-ConnectedengNBList,

 id-ConnectedengNBToAddList,

 id-ConnectedengNBToRemoveList,

 id-EN-DCSONConfigurationTransfer-ECT,

 id-EN-DCSONConfigurationTransfer-MCT,

 id-TimeSinceSecondaryNodeRelease,

 id-UERadioCapabilityID,

 id-UERadioCapability-NR-Format

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

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

--

-- NAS TRANSPORT ELEMENTARY PROCEDURES

--

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

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

--

-- DOWNLINK NAS TRANSPORT

--

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

DownlinkNASTransport ::= SEQUENCE {

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

 ...

}

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

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

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

 { ID id-NAS-PDU CRITICALITY reject TYPE NAS-PDU PRESENCE mandatory}|

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

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

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

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

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

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

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

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

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

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

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

 { ID id-Subscription-Based-UE-DifferentiationInfo CRITICALITY ignore TYPE Subscription-Based-UE-DifferentiationInfo PRESENCE optional}|

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

 { ID id-UERadioCapabilityID CRITICALITY reject TYPE UERadioCapabilityID PRESENCE optional},

 ...

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

-- HANDOVER RESOURCE ALLOCATION ELEMENTARY PROCEDURE

--

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

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

--

-- Handover Request

--

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

HandoverRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {HandoverRequestIEs} },

 ...

}

HandoverRequestIEs S1AP-PROTOCOL-IES ::= {

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

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

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

 { ID id-uEaggregateMaximumBitrate CRITICALITY reject TYPE UEAggregateMaximumBitrate PRESENCE mandatory}|

 { ID id-E-RABToBeSetupListHOReq CRITICALITY reject TYPE E-RABToBeSetupListHOReq PRESENCE mandatory}|

 { ID id-Source-ToTarget-TransparentContainer CRITICALITY reject TYPE Source-ToTarget-TransparentContainer PRESENCE mandatory}|

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

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

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

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

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

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

 { ID id-NASSecurityParameterstoE-UTRAN CRITICALITY reject TYPE NASSecurityParameterstoE-UTRAN PRESENCE conditional

 -- This IE shall be present if the Handover Type IE is set to the value "UTRANtoLTE" or "GERANtoLTE" -- }|

 { ID id-CSG-Id CRITICALITY reject TYPE CSG-Id PRESENCE optional}|

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

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

 { ID id-MME-UE-S1AP-ID-2 CRITICALITY ignore TYPE MME-UE-S1AP-ID PRESENCE optional}|

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

 { ID id-ManagementBasedMDTPLMNList CRITICALITY ignore TYPE MDTPLMNList PRESENCE optional}|

 { ID id-Masked-IMEISV CRITICALITY ignore TYPE Masked-IMEISV PRESENCE optional}|

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

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

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

 { ID id-V2XServicesAuthorized CRITICALITY ignore TYPE V2XServicesAuthorized PRESENCE optional}|

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

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

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

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

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

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

 { ID id-Subscription-Based-UE-DifferentiationInfo CRITICALITY ignore TYPE Subscription-Based-UE-DifferentiationInfo PRESENCE optional}|

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

 { ID id-UERadioCapabilityID CRITICALITY reject TYPE UERadioCapabilityID PRESENCE optional},

 ...

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

-- Path Switch Request Acknowledge

--

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

PathSwitchRequestAcknowledge ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { PathSwitchRequestAcknowledgeIEs} },

 ...

}

PathSwitchRequestAcknowledgeIEs 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-uEaggregateMaximumBitrate CRITICALITY ignore TYPE UEAggregateMaximumBitrate PRESENCE optional}|

 { ID id-E-RABToBeSwitchedULList CRITICALITY ignore TYPE E-RABToBeSwitchedULList PRESENCE optional}|

 { ID id-E-RABToBeReleasedList CRITICALITY ignore TYPE E-RABList PRESENCE optional}|

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

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

 { ID id-MME-UE-S1AP-ID-2 CRITICALITY ignore TYPE MME-UE-S1AP-ID PRESENCE optional}|

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

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

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

 { ID id-V2XServicesAuthorized CRITICALITY ignore TYPE V2XServicesAuthorized PRESENCE optional}|

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

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

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

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

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

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

 { ID id-Subscription-Based-UE-DifferentiationInfo CRITICALITY ignore TYPE Subscription-Based-UE-DifferentiationInfo PRESENCE optional}|

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

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

 { ID id-UERadioCapabilityID CRITICALITY reject TYPE UERadioCapabilityID PRESENCE optional},

 ...

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

-- INITIAL CONTEXT SETUP ELEMENTARY PROCEDURE

--

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

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

--

-- Initial Context Setup Request

--

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

InitialContextSetupRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {InitialContextSetupRequestIEs} },

 ...

}

InitialContextSetupRequestIEs S1AP-PROTOCOL-IES ::= {

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

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

 { ID id-uEaggregateMaximumBitrate CRITICALITY reject TYPE UEAggregateMaximumBitrate PRESENCE mandatory}|

 { ID id-E-RABToBeSetupListCtxtSUReq CRITICALITY reject TYPE E-RABToBeSetupListCtxtSUReq PRESENCE mandatory}|

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

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

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

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

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

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

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

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

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

 { ID id-RegisteredLAI CRITICALITY ignore TYPE LAI PRESENCE optional}|

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

 { ID id-MME-UE-S1AP-ID-2 CRITICALITY ignore TYPE MME-UE-S1AP-ID PRESENCE optional}|

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

 { ID id-ManagementBasedMDTPLMNList CRITICALITY ignore TYPE MDTPLMNList PRESENCE optional}|

 { ID id-AdditionalCSFallbackIndicator CRITICALITY ignore TYPE AdditionalCSFallbackIndicator PRESENCE conditional}|

 { ID id-Masked-IMEISV CRITICALITY ignore TYPE Masked-IMEISV PRESENCE optional}|

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

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

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

 { ID id-V2XServicesAuthorized CRITICALITY ignore TYPE V2XServicesAuthorized PRESENCE optional}|

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

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

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

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

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

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

 { ID id-Subscription-Based-UE-DifferentiationInfo CRITICALITY ignore TYPE Subscription-Based-UE-DifferentiationInfo PRESENCE optional}|

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

 { ID id-UERadioCapabilityID CRITICALITY reject TYPE UERadioCapabilityID PRESENCE optional},

 ...

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

-- UE CONTEXT MODIFICATION ELEMENTARY PROCEDURE

--

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

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

--

-- UE Context Modification Request

--

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

UEContextModificationRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { UEContextModificationRequestIEs} },

 ...

}

UEContextModificationRequestIEs S1AP-PROTOCOL-IES ::= {

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

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

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

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

 { ID id-uEaggregateMaximumBitrate CRITICALITY ignore TYPE UEAggregateMaximumBitrate PRESENCE optional}|

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

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

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

 { ID id-RegisteredLAI CRITICALITY ignore TYPE LAI PRESENCE optional}|

 { ID id-AdditionalCSFallbackIndicator CRITICALITY ignore TYPE AdditionalCSFallbackIndicator PRESENCE conditional}|

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

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

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

 { ID id-V2XServicesAuthorized CRITICALITY ignore TYPE V2XServicesAuthorized PRESENCE optional}|

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

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

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

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

 { ID id-UERadioCapabilityID CRITICALITY reject TYPE UERadioCapabilityID PRESENCE optional},

 ...

}

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

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

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

--

-- UE RADIO CAPABILITY MATCH ELEMENTARY PROCEDURE

--

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

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

--

-- UE Radio Capability Match Request

--

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

UERadioCapabilityMatchRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { UERadioCapabilityMatchRequestIEs} },

 ...

}

UERadioCapabilityMatchRequestIEs S1AP-PROTOCOL-IES ::= {

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

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

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

 { ID id-UERadioCapabilityID CRITICALITY reject TYPE UERadioCapabilityID PRESENCE optional },

 ...

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

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

--

-- UE CAPABILITY INFO INDICATION ELEMENTARY PROCEDURE

--

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

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

--

-- UE Capability Info Indication

--

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

UECapabilityInfoIndication ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { UECapabilityInfoIndicationIEs} },

 ...

}

UECapabilityInfoIndicationIEs S1AP-PROTOCOL-IES ::= {

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

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

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

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

 { ID id-UE-Application-Layer-Measurement-Capability CRITICALITY ignore TYPE UE-Application-Layer-Measurement-Capability PRESENCE optional}|

 { ID id-LTE-M-Indication CRITICALITY ignore TYPE LTE-M-Indication PRESENCE optional}|

 { ID id-UERadioCapability-NR-Format CRITICALITY ignore TYPE UERadioCapability PRESENCE optional},

 ...

}

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

-- UE RADIO CAPABILITY ID MAPPING REQUEST PROCEDURE

--

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

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

--

-- UE Radio Capability ID Mapping Request

--

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

UERadioCapabilityIDMappingRequest::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { UERadioCapabilityIDMappingRequestIEs} },

 ...

}

UERadioCapabilityIDMappingRequestIEs S1AP-PROTOCOL-IES ::= {

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

 ...

}

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

--

-- UE Radio Capability ID Mapping Response

--

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

UERadioCapabilityIDMappingResponse ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { UERadioCapabilityIDMappingResponseIEs} },

 ...

}

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

NEXT CHANGE

9.3.4 Information Element Definitions

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

UERadioCapabilityID ::= OCTET STRING

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

9.3.6 Constant Definitions

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

--

-- Constant definitions

--

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

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

id-eNBCPRelocationIndication ProcedureCode ::= 60

id-MMECPRelocationIndication ProcedureCode ::= 61

id-SecondaryRATDataUsageReport ProcedureCode ::= 62

id-UERadioCapabilityIDMapping ProcedureCode ::= d1

<<<<<<<<<<<<<<<<<<<< Unmodified Text omitted >>>>>>>>>>>>>>>>>>>>

id-LastNG-RANPLMNIdentity ProtocolIE-ID ::= 290

id-ConnectedengNBList ProtocolIE-ID ::= 291

id-ConnectedengNBToAddList ProtocolIE-ID ::= 292

id-ConnectedengNBToRemoveList ProtocolIE-ID ::= 293

id-EN-DCSONConfigurationTransfer-ECT ProtocolIE-ID ::= 294

id-EN-DCSONConfigurationTransfer-MCT ProtocolIE-ID ::= 295

id-IMSvoiceEPSfallbackfrom5G ProtocolIE-ID ::= 296

id-TimeSinceSecondaryNodeRelease ProtocolIE-ID ::= 297

id-RequestTypeAdditionalInfo ProtocolIE-ID ::= 298

id-AdditionalRRMPriorityIndex ProtocolIE-ID ::= 299

id-ContextatSource ProtocolIE-ID ::= 300

id-UERadioCapabilityID ProtocolIE-ID ::= d2

id-UERadioCapability-NR-Format ProtocolIE-ID ::= d3

END