**3GPP TSG-CT WG1 Meeting #137-eC1-22abcd**

**E-Meeting, 18th – 26th August 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **24.301** | **CR** | **3765** | **rev** | **1** | **Current version:** | **17.7.0** |  |
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| *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 | **x** | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | Extended NAS timers based on satellite RAT type |
|  |  |
| ***Source to WG:*** | Ericsson, MediaTek Inc., Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | IoT\_SAT\_ARCH\_EPS |  | ***Date:*** | 2022-08-11 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | In discussions on extending NAS timers at satellite NG RAN access it was concluded that no extension would be needed at LEO but it was not clear to CT1 whether UE NAS has the information available on current satellite NG-RAN RAT type. An LS was sent to RAN2 in R2-2204070/ C1-222098 to seek clarification.In a reply LS (R2-2206664) RAN2 clarifies that current satellite NG-RAN RAT type is available in AS and aligned to the RAT type that is indicated to AMF via NG-AP. RAN2 implies that the satellite NG-RAN RAT type in AS can be available in UE NAS and no explicit update of RAN specification is needed for this.Even though the LS exchange was for 5GS, it is equally applicable for EPS and satellite E-UTRAN access.It is therefore proposed that NAS timer extension at satellite E-UTRAN access is limited to RAT types MEO and GEO. It is proposed to specify this normatively as alignment between UE and network is required on applied NAS timer for consistent procedure execution. |
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| ***Summary of change:*** | A note is added to inform of UE NAS using current satellite E-UTRAN RAT type as available in lower layers.Timer values as used at satellite E-UTRAN access are limited to MEO and GEO |
|  |  |
| ***Consequences if not approved:*** | The possible delay at LEO is longer than necessary resulting in slow recovery in cases of lost messages. |
|  |  |
| ***Clauses affected:*** | 3.2, 4.8.2, 10.2, 10.3 |
|  |  |
|  | **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:*** |  |

**\*\*\*\*\*\*\***

\* \* \* First Change \* \* \* \*

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

The term "mobile station" (MS) in the present document is synonymous with the term "user equipment" (UE) as defined in 3GPP TR 21.905 [1].

**1x CS fallback capable UE:** A UE that uses a CS infrastructure for a voice call and other CS-domain services by falling back to cdma2000® 1x access network if the UE is served by E‑UTRAN when a CS service is requested.

**Aggregate maximum bit rate:** The maximum bit rate that limits the aggregate bit rate of a set of non-GBR bearers of a UE. Definition derived from 3GPP TS 23.401 [10].

**APN based congestion control:** Congestion control in session management where the network can reject session management requests from UEs or deactivate PDN connections when the associated APN is congested.

**Attached for emergency bearer services:** A UE is attached for emergency bearer services if it has only a PDN connection for emergency bearer services established.

**Attached for access to RLOS:** A UE is attached for access to RLOS if the UE requested access to RLOS during the attach procedure and has a PDN connection for RLOS established after completion of attach procedure.

**Chosen PLMN:** The same as selected PLMN as specified in 3GPP TS 23.122 [6].

**Control plane CIoT EPS optimization:** signalling optimizations to enable efficient transport of user data (IP, non-IP, Ethernet or SMS) over control plane via the MME including optional header compression of IP data.

**Current TAI:** A TAI of a selected PLMN broadcast in the cell on which the UE is camping. If the cell is a satellite E-UTRA cell broadcasting multiple TAIs of the selected PLMN, the UE NAS layer selects the TAI from these multiple TAIs as specified in clause 5.3.xx.

NOTE 1: For the purpose of this definition, the selected PLMN can either be the registered PLMN or a PLMN selected according to PLMN selection rules as specified in 3GPP TS 23.122 [5].

**User plane CIoT EPS optimization:** signalling optimizations to enable efficient transport of user data (IP, non-IP or Ethernet) over the user plane.

**UE supporting CIoT EPS optimizations:** A UE that supports control plane CIoT EPS optimization or user plane CIoT EPS optimization and one or more other CIoT EPS optimizations when the UE is in S1 mode.

**Attached for EPS services with CP-CIoT EPS optimization:** A UE supporting CIoT EPS optimizations is attached for EPS services, and control plane CIoT EPS optimization along with one or more other CIoT EPS optimizations have been accepted by the network.

**Attached for EPS services with User plane CIoT EPS optimization:** A UE supporting CIoT EPS optimizations is attached for EPS services, and user plane CIoT EPS optimization along with one or more other CIoT EPS optimizations have been accepted by the network.

**Attached for EPS services with CIoT EPS optimization:** A UE is attached for EPS services with CP-CIoT EPS optimization or attached for EPS services with user plane CIoT EPS optimization.

**CS fallback cancellation request:** A request received from the MM sublayer to cancel a mobile originating CS fallback.

**CS fallback capable UE:** A UE that uses a CS infrastructure for a voice call and other CS-domain services by falling back to A/Gb or Iu mode if the UE is served by E‑UTRAN when a CS service is requested.

**CSG cell:** A cell in which only members of the CSG can get normal service. Depending on local regulation, the CSG cell can provide emergency bearer services also to subscribers who are not member of the CSG. Definition derived from 3GPP TS 23.401 [10].

**CSG ID:** A CSG ID is a unique identifier within the scope of one PLMN defined in 3GPP TS 23.003 [2] which identifies a Closed Subscriber Group (CSG) in the PLMN associated with a cell or group of cells to which access is restricted to members of the CSG.

**CSG selection**: A UE supporting CSG selection selects CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs. Definition derived from 3GPP TS 23.122 [6].

**Dedicated bearer:** An EPS bearer that is associated with uplink packet filters in the UE and downlink packet filters in the PDN GW where the filters only match certain packets. Definition derived from 3GPP TS 23.401 [10].

**Default bearer:** An EPS bearer that gets established with every new PDN connection. Its context remains established throughout the lifetime of that PDN connection. A default EPS bearer is a non-GBR bearer. Definition derived from 3GPP TS 23.401 [10].

**Emergency EPS bearer context:** A default EPS bearer context activated with request type "emergency" or "handover of emergency bearer services", or any dedicated EPS bearer context associated to this default EPS bearer context.

**EMM context:** An EMM context is established in the UE and the MME when an attach procedure is successfully completed.

**EMM-CONNECTED mode:** A UE is in EMM-CONNECTED mode when a NAS signalling connection between UE and network is established or after indication from the lower layers that the RRC connection has been resumed when the UE was in EMM-IDLE mode with suspend indication. The term EMM-CONNECTED mode used in the present document corresponds to the term ECM-CONNECTED state used in 3GPP TS 23.401 [10].

**EMM-IDLE mode:** A UE is in EMM-IDLE mode when no NAS signalling connection between UE and network exists or when RRC connection suspend has been indicated by lower layers. The term EMM-IDLE mode used in the present document corresponds to the term ECM-IDLE state used in 3GPP TS 23.401 [10].

**EPS security context:** In the present specification, EPS security context is used as a synonym for EPS NAS security context specified in 3GPP TS 33.401 [19].

**EPS services:** Services provided by PS domain. Within the context of this specification, EPS services is used as a synonym for GPRS services in 3GPP TS 24.008 [13].

**Evolved packet core network:** The successor to the 3GPP Release 7 packet-switched core network, developed by 3GPP within the framework of the 3GPP System Architecture Evolution (SAE).

**Evolved packet system:** The evolved packet system (EPS) or evolved 3GPP packet-switched domain consists of the evolved packet core network and the evolved universal terrestrial radio access network. Definition derived from 3GPP TS 23.401 [10].

**GBR bearer:** An EPS bearer that uses dedicated network resources related to a guaranteed bit rate (GBR) value, which are permanently allocated at EPS bearer establishment/modification. Definition derived from 3GPP TS 23.401 [10].

**General NAS level mobility management congestion control:** The type of congestion control that is applied at a general overload or congestion situation in the network, e.g. lack of processing resources.

**Group specific session management congestion control:** Type of congestion control at session management level that is applied to reject session management requests from UEs belonging to a particular group when one or more group congestion criteria as specified in 3GPP TS 23.401 [10] are met.

**Highest ranked ACDC category: The** ACDC category with the lowest value as defined in 3GPP TS 24.105 [35].

**Initial NAS message:** A NAS message is considered as an initial NAS message, if this NAS message can trigger the establishment of a NAS signalling connection. For instance, the ATTACH REQUEST message is an initial NAS message.

**IPv4v6 capability:** Capability of the IP stack associated with a UE to support a dual stack configuration with both an IPv4 address and an IPv6 address allocated.

**Kilobit:** 1000 bits.

**Last Visited Registered TAI:** A TAI which is contained in the TAI list that the UE registered to the network and which identifies the tracking area last visited by the UE. If the cell is a satellite cell broadcasting multiple TAIs, a TAI which is contained in the TAI list that the UE registered to the network and last selected by the UE as the current TAI.

**Linked Bearer Identity:** This identity indicates to which default bearer the additional bearer resource is linked.

**LIPA PDN connection:** A PDN connection, for which the default EPS bearer context or default PDP context was activated with an APN authorized to use LIPA. The network authorizes an APN for using LIPA based on the subscription profile (see 3GPP TS 29.272 [16C]) and subsequently the network considers this PDN connection a LIPA PDN connection.

**Lower layer failure**: A failure reported by the AS to the NAS that cannot be corrected on AS level. When the AS indicates a lower layer failure to NAS, the NAS signalling connection is not available.

**Mapped EPS security context:** A mapped security context to be used in EPS. Definition derived from 3GPP TS 33.401 [19].

**Mapped GUTI:** A GUTI which is mapped from a P-TMSI and an RAI allocated previously by an SGSN or a 5G-GUTI previously allocated by an AMF. Mapping rules are defined in 3GPP TS 23.003 [2]. Definition derived from 3GPP TS 23.401 [10].

**Megabit:** 1,000,000 bits.

**Message header:** A standard L3 message header as defined in 3GPP TS 24.007 [12].

**MME area:** An area containing tracking areas served by an MME.

**MO MMTEL voice call is started**: the MO-MMTEL-voice-started indication was received from upper layers (see 3GPP TS 24.173 [13E]) and after reception of the MO-MMTEL-voice-started indication, the MO-MMTEL-voice-ended indication has not been received.

**MO MMTEL video call is started**: the MO-MMTEL-video-started indication was received from upper layers (see 3GPP TS 24.173 [13E]) and after reception of the MO-MMTEL-video-started indication, the MO-MMTEL-video-ended indication has not been received.

**MO SMSoIP is started**: the MO-SMSoIP-attempt-started indication was received from upper layers (see 3GPP TS 24.341 [15D]) and after reception of the MO-SMSoIP-attempt-started indication, the MO-SMSoIP-attempt-ended indication has not been received.

**MUSIM UE:** A UE with multiple valid USIMs, capable of initiating and maintaining simultaneous separate registration states with PLMN(s) using identities and credentials associated with those USIMs and supporting one or more of the NAS signalling connection release, the paging indication for voice services, the reject paging request, the paging restriction and the paging timing collision control.

**NAS level mobility management congestion control:** Congestion control mechanism in the network in mobility management. "NAS level mobility management congestion control" consists of "subscribed APN based congestion control" and "general NAS level mobility management congestion control".

**NAS signalling connection:** A peer to peer S1 mode connection between UE and MME. A NAS signalling connection consists of the concatenation of an RRC connection via the "LTE-Uu" interface and an S1AP connection via the S1 interface. Additionally, for the purpose of optimized handover or idle mode mobility from cdma2000® HRPD access to E‑UTRAN (see 3GPP TS 23.402 [11]), the NAS signalling connection can consist of a concatenation of an S101‑AP connection and a signalling tunnel over a cdma2000® HRPD access network.

NOTE 2: cdma2000® is a registered trademark of the Telecommunications Industry Association (TIA-USA).

**NAS signalling connection recovery**: A mechanism initiated by the NAS to restore the NAS signalling connection on indication of "RRC connection failure" by the lower layers.

**Native GUTI:** A GUTI previously allocated by an MME. Definition derived from 3GPP TS 23.401 [10].

**Non-access stratum protocols:** The protocols between UE and MSC or SGSN that are not terminated in the UTRAN, and the protocols between UE and MME that are not terminated in the E-UTRAN. Definition derived from 3GPP TR 21.905 [1].

**Non-emergency EPS bearer context:** Any EPS bearer context which is not an emergency EPS bearer context.

**Non-EPS services:** Services provided by CS domain. Within the context of this specification, non-EPS services is used as a synonym for non-GPRS services in 3GPP TS 24.008 [13]. A UE which camps on E-UTRAN can attach to both EPS services and non-EPS services.

**Non-GBR bearer:** An EPS bearer that uses network resources that are not related to a guaranteed bit rate (GBR) value. Definition derived from 3GPP TS 23.401 [10].

**PDN address:** An IP address assigned to the UE by the Packet Data Network Gateway (PDN GW).

**PDN connection for emergency bearer services:** A PDN connection with an emergency EPS bearer context or with a default PDP context activated with request type "emergency" or "handover of emergency bearer services".

**PDN connection for RLOS:** A PDN connection for which the default EPS bearer context was activated with request type "RLOS".

**Plain NAS message:** A NAS message with a header including neither a message authentication code nor a sequence number.

**Persistent EPS bearer context:** either a non-emergency EPS bearer context representing a GBR bearer with QoS equivalent to QoS of teleservice 11 and where there is a radio bearer associated with that context, or an emergency EPS bearer context where there is a radio bearer associated with that context.

NOTE 3: An example of a persistent EPS bearer context is a non-emergency EPS bearer context with QCI = 1 where there is a radio bearer associated with that context.

**Procedure Transaction Identity:** An identity which is dynamically allocated by the UE for the UE requested ESM procedures. The procedure transaction identity is released when the procedure is completed.

**RAT-related TMSI:** When the UE is camping on an E-UTRAN cell, the RAT-related TMSI is the GUTI; when it is camping on a GERAN or UTRAN cell, the RAT-related TMSI is the P-TMSI.

**Registered PLMN**: The PLMN on which the UE is registered. The identity of the registered PLMN is provided to the UE within the GUTI.

**Relay node:** A network element in the E-UTRAN, wirelessly connected to an eNode B and providing relaying function to UEs served by the E-UTRAN. Definition derived from 3GPP TS 23.401 [10].

**Removal of eCall only mode restriction:** All the limitations as described in 3GPP TS 22.101 [46] for the eCall only mode do not apply any more.

**RLOS EPS bearer context:** A default RLOS EPS bearer context which was activated with request type "RLOS", or any dedicated EPS bearer context associated to this default EPS bearer context.

The label **(S1 mode only)** indicates that this clause or paragraph applies only to a system which operates in S1 mode, i.e. with a functional division that is in accordance with the use of an S1 interface between the radio access network and the core network. The S1 mode includes WB-S1 mode and NB-S1 mode. In a multi-access system this case is determined by the current serving radio access network or the current serving satellite access network.

**In NB-S1 mode:** Indicates this paragraph applies only to a system which operates in NB-S1 mode. For a multi-access system this case applies if the current serving radio access network or the current serving satellite access network provides access to network services via E-UTRA by NB-IoT (see 3GPP TS 36.300 [20], 3GPP TS 36.331 [22], 3GPP TS 36.306 [44]).

**In WB-S1 mode:** Indicates this paragraph applies only to a system which operates in WB-S1 mode. For a multi-access system this case applies if the system operates in S1 mode, but not in NB-S1 mode. WB-S1 mode also includes satellite access.

**In WB-S1/CE mode:** Indicates this paragraph applies only when a UE, which is a CE mode B capable UE (see 3GPP TS 36.306 [44]), is operating in CE mode A or B in WB-S1 mode.

**Satellite E-UTRAN RAT type:** In case of satellite E-UTRAN access, RAT types are used to distinguish different types of satellite E-UTRAN access, as defined in 3GPP TS 38.413 [31]. In this version of the specification, the defined satellite E-UTRAN RAT types are "WB-E-UTRAN(LEO)", "WB-E-UTRAN(MEO)", " WB-E-UTRAN(GEO)", "NB-IoT(LEO)", "NB-IoT(MEO)", "NB-IoT(GEO)", "LTE-M(LEO)", "LTE-M(MEO)" and "LTE-M(GEO)".

**SCEF PDN Connection:** A PDN connection established between the UE and the Service Capability Exposure Function (SCEF) for transmitting the UE's non-IP data related to a specific application.

**SGi PDN Connection:** A PDN connection established between the UE and the Packet Gateway (P-GW) for transmitting the UE's IP, non-IP or Ethernet data related to a specific application.

**S101 mode:** Applies to a system that operates with a functional division that is in accordance with the use of an S101 interface. For the definition of the S101 reference point, see 3GPP TS 23.402 [11].

**SIPTO at the local network PDN connection:** A PDN connection, for which the default EPS bearer context or default PDP context was activated with an APN authorized to use SIPTO at the local network and it was activated such that the traffic of the PDN connection will be using an L-GW. The network authorizes an APN for using SIPTO at the local network based on the subscription profile (see 3GPP TS 29.272 [16C]) and subsequently the network considers this PDN connection a SIPTO at the local network PDN connection. SIPTO at the local network PDN connection can be of IP, non-IP or Ethernet PDN type.

**SIPTO at the local network PDN connection with a collocated L-GW:** A SIPTO at the local network PDN connection which is established to a L-GW function collocated with the (H)(e)NodeB. The core-network entity (i.e. the MME or the SGSN) can be aware of whether the SIPTO at the local network PDN connection with a collocated L-GW is used when the PDN connection is established.

**SIPTO at the local network PDN connection with a stand-alone GW:** A SIPTO at the local network PDN connection which is established to a stand-alone GW (with collocated L-GW and S-GW). The core-network entity (i.e. the MME or the SGSN) can be aware of whether the SIPTO at the local network PDN connection with a stand-alone GW is used when the PDN connection is established.

**"SMS only":** A subset of services which includes only Short Message Service. A UE camping on E-UTRAN can attach to both EPS services and "SMS only".

**SMS over NAS**: refers to SMS in MME or SMS over SGs.

**SMS over S102**: refers to SMS which uses 1xCS procedures in EPS as defined in 3GPP TS 23.272 [9].

**Subscribed APN based congestion control:** Congestion control in mobility management where the network can reject attach requests from UEs with a certain APN in the subscription.

**TAI list:** A list of TAIs that identify the tracking areas that the UE can enter without performing a tracking area updating procedure. The TAIs in a TAI list assigned by an MME to a UE pertain to the same MME area.

**Traffic flow aggregate:** A temporary aggregate of packet filters that are included in a UE requested bearer resource allocation procedure or a UE requested bearer resource modification procedure and that is inserted into a traffic flow template (TFT) for an EPS bearer context by the network once the UE requested bearer resource allocation procedure or UE requested bearer resource modification procedure is completed.

**UE configured for dual priority:** A UE which provides dual priority support is configured for NAS signalling low priority and also configured to override the NAS signalling low priority indicator (see 3GPP TS 24.368 [15A], 3GPP TS 31.102 [17]).

**UE configured to use AC11 – 15 in selected PLMN:** A UE configured with at least one access class in the range 11-15 on the USIM, and the access class is applicable in the selected PLMN according to 3GPP TS 22.011 [1A].

**UE's availability for voice calls in the IMS:** The indication of this availability or non-availability is provided by the upper layers of the UE as specified in 3GPP TS 24.229 [13D] in the annex relevant to the IP-Connectivity Access Network in use or determined in the NAS layer, as specified in clause 4.3.1. If availability is indicated, the UE uses the IM CN Subsystem and can terminate or originate requests for SIP sessions including an audio component with codecs suited for voice.

**UE's usage setting:** This is a UE setting that indicates whether the UE has preference for voice services over data services or vice-versa. If a UE has preference for voice services, then the UE's usage setting is "voice centric". If a UE has preference for data services, then the UE's usage setting is "data centric". A UE whose setting is "data centric" may still require access to voice services. A UE whose setting is "voice centric" may still require access to data services. This definition is derived from 3GPP TS 23.221 [8A] and it applies to voice capable UEs. If the UE is capable of both S1 mode and N1 mode, there is a single UE's usage setting which applies to both 5GS and EPS (see 3GPP TS 24.501 [54]).

**UE using EPS services with control plane CIoT EPS optimization:** AUE that is attached for EPS services with the control plane CIOT EPS optimization accepted by the network.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.221 [8A] apply:

**Restricted local operator services**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.401 [10] apply:

**APN rate control status**

**Cellular IoT (CIoT)**

**DCN-ID**

**eCall only mode**

**NarrowBand-IoT**

**Dedicated core network**

**PDN connection**

**Service Gap Control**

**UE paging probability information**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.272 [9] apply:

**CS fallback**

**SMS in MME**

**SMS over SGs**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.682 [11A] apply:

**SCEF**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.008 [13] apply:

**A/Gb mode**

**Access domain selection**

**Default PDP context**

**Extended idle-mode DRX cycle**

**Iu mode**

**Native P-TMSI**

**Power saving mode**

**PS signalling connection**

**RR connection**

**TFT**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 33.102 [18] apply:

**UMTS security context**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 33.401 [19] apply:

**Current EPS security context**

**Full native EPS security context**

**KASME**

**K'ASME**

**Mapped security context**

**Native EPS security context**

**Non-current EPS security context**

**Partial native EPS security context**

**Data via MME**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.122 [6] apply:

**Country**

**EHPLMN**

**HPLMN**

**Shared Network**

**Suitable Cell**

**VPLMN**

**Limited Service State**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.216 [8] apply:

**SRVCC**

**vSRVCC**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.011 [1A] apply:

**Extended Access Barring**

**Application specific Congestion control for Data Communication (ACDC)**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.003 [10] apply:

**Local Home Network Identifier**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.303 [31] apply:

**ProSe direct communication**

**ProSe direct discovery**

**ProSe UE-to-Network Relay**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.161 [36] apply:

**Multi-access PDN connection**

**NBIFOM**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.167 [45] apply:

**eCall over IMS**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.501 [54] apply:

**5G-EA**

**5G-IA**

**5GMM-CONNECTED mode**

**5GMM-DEREGISTERED**

**5GMM-DEREGISTERED-INITIATED**

**5GMM-IDLE mode**

**5GMM-NULL**

**5GMM-REGISTERED**

**5GMM-REGISTERED-INITIATED**

**5GMM-SERVICE-REQUEST-INITIATED**

**Applicable UE radio capability ID for the current UE radio configuration in the selected network**

**Control plane CIoT 5GS optimization**

**N1 mode**

**NB-N1 mode**

**Native 5G-GUTI**

**Service-level-AA**

**UE operating in single-registration mode in a network supporting N26 interface**

**UE supporting UAS services**

**User plane CIoT 5GS optimization**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 36.413 [23] apply:

**User Location Information**

For the purposes of the present document, the following terms and its definitions given in 3GPP TS 23.256 [60] apply:

**3GPP UAV ID**

**CAA (Civil Aviation Administration)-Level UAV Identity**

**Command and Control (C2) Communication**

**UAV controller (UAV-C)**

**UAS Services**

**UAS Service Supplier (USS)**

**Uncrewed Aerial System (UAS)**

**USS communication**

**UUAA**

**UUAA-SM**

\* \* \* Next Change \* \* \* \*

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5G-GUTI 5G-Globally Unique Temporary Identifier

5GMM 5GS Mobility Management

5GS 5G System

ACDC Application specific Congestion control for Data Communication

AKA Authentication and Key Agreement

AMBR Aggregate Maximum Bit Rate

APN Access Point Name

APN-AMBR APN Aggregate Maximum Bit Rate

ARP Allocation Retention Priority

BCM Bearer Control Mode

CIoT Cellular IoT

CP-CIoT Control Plane CIoT

CP-EDT Control Plane EDT

CSG Closed Subscriber Group

E-UTRA Evolved Universal Terrestrial Radio Access

E-UTRAN Evolved Universal Terrestrial Radio Access Network

EAB Extended Access Barring

ECM EPS Connection Management

eDRX Extended idle-mode DRX cycle

EDT Early Data Transmission

EENLV Extended Emergency Number List Validity

eKSI Key Set Identifier for E-UTRAN

EMM EPS Mobility Management

eNode B Evolved Node B

EPC Evolved Packet Core Network

EPS Evolved Packet System

EPS-UPIP User-plane integrity protection in EPS

ESM EPS Session Management

GBR Guaranteed Bit Rate

GEO Geostationary Orbit

GUMMEI Globally Unique MME Identifier

GUTI Globally Unique Temporary Identifier

HeNB Home eNode B

HRPD High Rate Packet Data

IoT Internet of Things

IP-CAN IP-Connectivity Access Network

ISR Idle mode Signalling Reduction

kbps Kilobits per second

KSI Key Set Identifier

L-GW Local PDN Gateway

LEO Low Earth Orbit

LHN-ID Local Home Network Identifier

LIPA Local IP Access

M-TMSI M-Temporary Mobile Subscriber Identity

Mbps Megabits per second

MBR Maximum Bit Rate

MEO Medium Earth Orbit

MME Mobility Management Entity

MMEC MME Code

MT-EDT Mobile Terminated-Early Data Transmission

MUSIM Multi-USIM

NB-IoT Narrowband IoT

NR New Radio

NSSAI Network Slice Selection Assistance Information

PD Protocol Discriminator

PDN GW Packet Data Network Gateway

ProSe Proximity-based Services

PSM Power Saving Mode

PTI Procedure Transaction Identity

QCI QoS Class Identifier

QoS Quality of Service

RACS Radio Capability Signalling Optimisation

RLOS Restricted Local Operator Services

ROHC RObust Header Compression

RRC Radio Resource Control

S-NSSAI Single NSSAI

S-TMSI S-Temporary Mobile Subscriber Identity

S101-AP S101 Application Protocol

S1AP S1 Application Protocol

SAE System Architecture Evolution

SCEF Service Capability Exposure Function

SGC Service Gap Control

SIPTO Selected IP Traffic Offload

TA Tracking Area

TAC Tracking Area Code

TAI Tracking Area Identity

TFT Traffic Flow Template

TI Transaction Identifier

TIN Temporary Identity used in Next update

UAS Uncrewed Aerial System

UAV Uncrewed Aerial Vehicle

URN Uniform Resource Name

USS UAS Service Supplier

UUAA USS UAV Authorization/Authentication

V2X Vehicle-to-Everything

WUS Wake-Up Signal

\* \* \* Next Change \* \* \* \*

### 4.8.2 UE using satellite E-UTRAN access

In WB-S1 mode via satellite E-UTRAN access, the UE shall apply the value of the applicable NAS timer indicated in tables 10.2.1 and indicated in table 10.3.1 for WB-S1/CE mode.

NOTE 1: The applied NAS timer values are based on the current satellite E-UTRAN RAT type determined based on information from lower layers.

The NAS timer value obtained is used as described in the appropriate procedure clause of this specification. The NAS timer value shall be calculated at start of a NAS procedure and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.

When an MME that supports WB-S1 mode performs NAS signalling with a UE via satellite E-UTRAN access, the MME shall calculate the value of the applicable NAS timer indicated in tables 10.2.2 and indicated in table 10.3.2 for WB-S1/CE mode.

NOTE 2: The applied NAS timer values are based on the current satellite E-UTRAN RAT type determined based on information from lower layers.

The NAS timer value obtained is used as described in the appropriate procedure clause of this specification. The NAS timer value shall be calculated at start of a NAS procedure and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.

NOTE: When using satellite E-UTRAN access, the restriction on use of enhanced coverage indication from the network is not considered when applicable NAS timers are determined.

\* \* \* Next Change \* \* \* \*

## 10.2 Timers of EPS mobility management

Table 10.2.1: EPS mobility management timers – UE side

| TIMER NUM. | TIMER VALUE | STATE | CAUSE OF START | NORMAL STOP | ON EXPIRY |
| --- | --- | --- | --- | --- | --- |
| T3402 | Default 12 min.NOTE 1 | EMM-DEREGISTEREDEMM-REGISTERED | At attach failure and the attempt counter is equal to 5.At tracking area updating failure and the attempt counter is equal to 5.ATTACH ACCEPT with EMM cause #16 or #17 and the attempt counter is equal to 5 for CS/PS mode 2 UE, or ATTACH ACCEPT with EMM cause #22, as described in clause 5.5.1.3.4.3.TRACKING AREA UPDATE ACCEPT with EMM cause #16 or #17 and the attempt counter is equal to 5 for CS/PS mode 2 UE, TRACKING AREA UPDATE ACCEPT with EMM cause #16 or #17 and the attempt counter is equal to 5 for CS/PS mode 1 UE with "IMS voice not available" and with a persistent EPS bearer context, or TRACKING AREA UPDATE ACCEPT with EMM cause #22, as described in clause 5.5.3.3.4.3.ATTACH ACCEPT and the attempt counter is equal to 5 as described in clause 5.5.1.2.4A and 5.5.1.2.6A.TRACKING AREA UPDATE ACCEPT and the attempt counter is equal to 5 as described in clause 5.5.3.2.4A and 5.5.3.2.6A.DETACH REQUEST with other EMM cause values than those treated in clause 5.5.2.3.2 or no EMM cause IE and Detach type IE indicates "re-attach not required" as described in clause 5.5.2.3.4.  | ATTACH REQUEST sentTRACKING AREA UPDATE REQUEST sentNAS signalling connection released | Initiation of the attach procedure, if still required or TAU procedure |
| T3410 | 15sNOTE 7NOTE 8In WB-S1/CE mode, 85sNOTE 15 | EMM-REGISTERED-INITIATED | ATTACH REQUEST sent | ATTACH ACCEPT receivedATTACH REJECT received | Start T3411 or T3402 as described in clause 5.5.1.2.6 |
| T3411 | 10s | EMM-DEREGISTERED. ATTEMPTING-TO-ATTACHEMM-REGISTERED. ATTEMPTING-TO-UPDATEEMM-REGISTERED. NORMAL-SERVICE | At attach failure due to lower layer failure, T3410 timeout or attach rejected with other EMM cause values than those treated in clause 5.5.1.2.5.At tracking area updating failure due to lower layer failure, T3430 timeout or TAU rejected with other EMM cause values than those treated in clause 5.5.3.2.5.ATTACH ACCEPT and the attempt counter is less than 5 as described in clause 5.5.1.2.4A and 5.5.1.2.6A.TRACKING AREA UPDATE ACCEPT and the attempt counter is less than 5 as described in clause 5.5.3.2.4A and 5.5.3.2.6A. | ATTACH REQUEST sentTRACKING AREA UPDATE REQUEST sentEMM-CONNECTED mode entered (NOTE 6) | Retransmission of the ATTACH REQUEST, if still required as described in clause 5.5.1.2.6 or retransmission of TRACKING AREA UPDATE REQUEST |
| T3412 | Default 54 min.NOTE 2NOTE 5 | EMM-REGISTERED | In EMM-REGISTERED, when EMM-CONNECTED mode is left. | When entering state EMM-DEREGISTERED or when entering EMM-CONNECTED mode.  | Initiation of the periodic TAU procedure if the UE is not attached for emergency bearer services or T3423 started under the conditions as specified in clause 5.3.5.Implicit detach from network if the UE is attached for emergency bearer services. |
| T3416 | 30sNOTE 7NOTE 8In WB-S1/CE mode, 48sNOTE 15 | EMM-REGISTERED-INITIATEDEMM-REGISTEREDEMM-DEREGISTERED-INITIATEDEMM-TRACKING-AREA-UPDATING-INITIATEDEMM-SERVICE-REQUEST-INITIATED | RAND and RES stored as a result of an EPS authentication challenge | SECURITY MODE COMMAND receivedSERVICE REJECT receivedSERVICE ACCEPT receivedTRACKING AREA UPDATE ACCEPT receivedAUTHENTICATION REJECT receivedAUTHENTICATION FAILURE sentEMM-DEREGISTERED, EMM-NULL orEMM-IDLE mode entered | Delete the stored RAND and RES |
| T3417 | 5s NOTE 7NOTE 8NOTE 13In WB-S1/CE mode, 51sNOTE 15 | EMM-SERVICE-REQUEST-INITIATED | SERVICE REQUEST sent or EXTENDED SERVICE REQUEST sent with service type set to "packet services via S1" in case a, b, c, h, k, l and o in clause 5.6.1.1EXTENDED SERVICE REQUEST sent in case f, g, i, j, p and q in clause 5.6.1.1CONTROL PLANE SERVICE REQUEST sent as specified in clause 5.6.1.2.2 | Bearers have been set upSERVICE REJECT receivedSERVICE ACCEPT receivedIndication of system change from lower layer receivedcdma2000® 1xCS fallback rejection receivedsee clause 5.6.1.4.2 | Abort the procedure |
| T3417ext | 10s | EMM-SERVICE-REQUEST-INITIATED | EXTENDED SERVICE REQUEST sent in case d in clause 5.6.1.1 | Inter-system change from S1 mode to A/Gb mode or Iu mode is completedInter-system change from S1 mode to A/Gb mode or Iu mode is failedSERVICE REJECT received | Select GERAN or UTRAN |
| T3417ext-mt | 4s | EMM-SERVICE-REQUEST-INITIATED | EXTENDED SERVICE REQUEST sent in case e in clause 5.6.1.1 and the CSFB response was set to "CS fallback accepted by the UE" | Inter-system change from S1 mode to A/Gb mode or Iu mode is completedInter-system change from S1 mode to A/Gb mode or Iu mode is failedSERVICE REJECT received | Select GERAN or UTRAN |
| T3418 | 20sNOTE 7NOTE 8In WB-S1/CE mode, 38sNOTE 15 | EMM-REGISTERED-INITIATEDEMM-REGISTEREDEMM-TRACKING-AREA-UPDATING-INITIATEDEMM-DEREGISTERED-INITIATEDEMM-SERVICE-REQUEST-INITIATED | AUTHENTICATION FAILURE (EMM cause = #20 "MAC failure" or #26 "non-EPS authentication unacceptable") sent | AUTHENTICATION REQUEST received or AUTHENTICATION REJECT receivedorSECURITY MODE COMMAND receivedwhen entering EMM-IDLE modeindication of transmission failure of AUTHENTICATION FAILURE message from lower layers | On first expiry, the UE should consider the network as false and follow item f of clause 5.4.2.7, if the UE is not attached for emergency bearer services or access to RLOS.On first expiry, the UE will follow clause 5.4.2.7 under "For items c, d, and e:", if the UE is attached for emergency bearer services or if the UE is attached for access to RLOS. |
| T3420 | 15sNOTE 7NOTE 8In WB-S1/CE mode, 33sNOTE 15 | EMM-REGISTERED-INITIATEDEMM-REGISTEREDEMM-DEREGISTERED-INITIATEDEMM-TRACKING-AREA-UPDATING-INITIATEDEMM-SERVICE-REQUEST-INITIATED | AUTHENTICATION FAILURE (cause = #21 "synch failure") sent | AUTHENTICATION REQUEST received or AUTHENTICATION REJECT receivedorSECURITY MODE COMMAND receivedwhen entering EMM-IDLE modeindication of transmission failure of AUTHENTICATION FAILURE message from lower layers | On first expiry, the UE should consider the network as false and follow item f of clause 5.4.2.7, if the UE is not attached for emergency bearer services or access to RLOS.On first expiry, the UE will follow clause 5.4.2.7 under "For items c, d, and e:", if the UE is attached for emergency bearer services or if the UE is attached for access to RLOS. |
| T3421 | 15sNOTE 7NOTE 8In WB-S1/CE mode, 45sNOTE 15 | EMM-DEREGISTERED-INITIATEDEMM-REGISTERED.IMSI-DETACH-INITIATED | DETACH REQUEST sent withthe Detach type IE not indicating "switch off" | DETACH ACCEPT received | Retransmission of DETACH REQUEST |
| T3423 | NOTE 3 | EMM-REGISTERED | T3412 expires while ISR is activated and either T3346 is running or the UE is in one of the following states:- EMM-REGISTERED.NO-CELL-AVAILABLE;- EMM-REGISTERED.PLMN-SEARCH;-EMM-REGISTERED.UPDATE-NEEDED; or-EMM-REGISTERED.LIMITED-SERVICE. | When entering state EMM-DEREGISTERED or when entering EMM-CONNECTED mode. | Set TIN to "P‑TMSI".For A/Gb mode or Iu mode, see 3GPP TS 24.008 [13] |
| T3430 | 15sNOTE 7NOTE 8In WB-S1/CE mode, 77sNOTE 15 | EMM-TRACKING-AREA-UPDATING-INITIATED | TRACKING AREA UPDATE REQUEST sent | TRACKING AREA UPDATE ACCEPT receivedTRACKING AREA UPDATE REJECT received | Start T3411 or T3402 as described in clause 5.5.3.2.6 |
| T3440 | 10sNOTE 7 (applicable to case k) in clause 5.3.1.2.1)NOTE 8In WB-S1/CE mode, 34s (applicable to case k) in clause 5.3.1.2.1)NOTE 14NOTE 15 | EMM-DEREGISTERED EMM-REGISTERED | ATTACH REJECT, DETACH REQUEST, TRACKING AREA UPDATE REJECT with any of the EMM cause #3, #6, #7, #8, #11, #12, #13, #14, #15, #22, #25, #31, #35 or #42SERVICE REJECT received with any of the EMM cause #3, #6, #7, #8, #11, #12, #13, #15, #22, #25, #31, #35, #39 or #42TRACKING AREA UPDATE ACCEPT described in clause 5.3.1.2.1 case b)DETACH ACCEPT received after the UE sent DETACH REQUEST with detach type to "IMSI detach"Upon receipt of ESM DATA TRANSPORT message as described in clause 5.3.1.2.1 (NOTE 9)AUTHENTICATION REJECT receivedSERVICE ACCEPT received as described in clause 5.3.1.2.1 case j)DETACH ACCEPT received as described in clause 5.3.1.2.1 case l) | NAS signalling connection releasedBearers have been set up or a request for PDN connection for emergency bearer services or a CS emergency call is startedUpon receipt of ESM DATA TRANSPORT message as described in clause 5.3.1.2.1 (NOTE 9) | Release the NAS signalling connection for the cases a), b), c) and l)as described in clause 5.3.1.2 |
| EMM-DEREGISTEREDEMM-DEREGISTERED.NORMAL-SERVICE | TRACKING AREA UPDATE REJECT, SERVICE REJECT with any of the EMM cause #9, #10 or #40 | NAS signalling connection released | Release the NAS signalling connection for the cases d) and e) as described in clause 5.3.1.2 and initiation of the attach procedure as specified in clause 5.5.3.2.5, 5.5.3.3.5 or 5.6.1.5  |
| T3442 | NOTE 4 | EMM-REGISTERED | SERVICE REJECT received with EMM cause #39 "CS service temporarily not available" with a non-zero T3442 value | TRACKING AREA UPDATE REQUEST sent | None |
| T3444 | NOTE 11 | All except EMM-NULL and 5GMM-NULL (defined in 3GPP TS 24.501 [54]) | - UE configured for eCall only mode enters EMM-IDLE mode after an eCall over IMS- UE configured for eCall only mode moves from GERAN/UTRAN to E-UTRAN with timer T3242 (see 3GPP TS 24.008 [13]) running- UE configured for eCall only mode enters 5GMM-IDLE mode (defined in 3GPP TS 24.501 [54]) after an eCall over IMS | - Removal of eCall only restriction- Intersystem change from S1 mode to A/Gb or Iu mode | Perform eCall inactivity procedure in EPS as described in clause 5.5.4.Perform eCall inactivity procedure in 5GS as described in 3GPP TS 24.501 [54]. |
| T3445 | NOTE 12 | All except EMM-NULL and 5GMM-NULL (defined in 3GPP TS 24.501 [54]) | - UE configured for eCall only mode enters EMM-IDLE mode after a call to a non-emergency MSISDN or URI for test or terminal reconfiguration service- UE configured for eCall only mode moves from GERAN/UTRAN to E-UTRAN with timer T3243 (see 3GPP TS 24.008 [13]) running- UE configured for eCall only mode enters 5GMM-IDLE mode (defined in 3GPP TS 24.501 [54]) after a call to a non-emergency MSISDN or URI for test or terminal reconfiguration service | Removal of eCall only restriction- Intersystem change from S1 mode to A/Gb or Iu mode | Perform eCall inactivity procedure in EPS as described in clause 5.5.4.Perform eCall inactivity procedure in 5GS as described in 3GPP TS 24.501 [54]. |
| T3447 | NOTE 2 | All except EMM-NULL | NAS signalling connection release that was not established for paging, attach without PDN connection or tracking area update request without "active" or "signalling active" flag set.N1 NAS signalling connection release that was not established due to paging, or REGISTRATION REQUEST for initial registration with Follow-on request indicator set to "No follow-on request pending", or REGISTRATION REQUEST for mobility and periodic registration update with Follow-on request indicator set to "No follow-on request pending" and without Uplink data status IE included (defined in 3GPP TS 24.501 [54]). | ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT without the T3447 value IE.Inter-system change from S1 mode to A/Gb mode or Iu mode is completedREGISTRATION ACCEPT without the T3447 value IE (defined in 3GPP TS 24.501 [54]). CONFIGURATION UPDATE COMMAND with the T3447 value IE set to zero or deactivated (defined in 3GPP TS 24.501 [54]). | Allowed to initiate transfer of uplink user data |
| T3448 | NOTE 10 | All except EMM-NULL and 5GMM-NULL (defined in 3GPP TS 24.501 [54]) | ATTACH ACCEPT message or TRACKING AREA UPDATE ACCEPT message or SERVICE ACCEPT message received with a non-zero T3448 value.SERVICE REJECT message received with EMM cause #22 "Congestion" and a non-zero T3448 value.REGISTRATION ACCEPT message or SERVICE ACCEPT message received with a non-zero T3448 value (defined in 3GPP TS 24.501 [54])SERVICE REJECT message received with 5GMM cause #22 "Congestion" and a non-zero T3448 value(defined in 3GPP TS 24.501 [54]) | SERVICE ACCEPT message or TRACKING AREA UPDATE ACCEPT message received without T3448 valueSERVICE ACCEPT message or REGISTRATION ACCEPT message received without T3448 value(defined in 3GPP TS 24.501 [54]) | Allowed to initiate transfer of user data via the control plane |
| T3449 | 5sNOTE 7NOTE 8In WB-S1/CE mode, 51sNOTE 15 | EMM-REGISTERED | Bearers have been set upSECURITY MODE COMMAND message received | SERVICE ACCEPT message receivedSecurity protected ESM message or a security protected EMM message not related to an EMM common procedure received | SERVICE ACCEPT message considered as a protocol error and EMM STATUS returned |
| NOTE 1: The cases in which the default value of this timer is used are described in clause 5.3.6.NOTE 2: The value of this timer is provided by the network operator during the attach and tracking area updating procedures.NOTE 3: The value of this timer may be provided by the network in the ATTACH ACCEPT message and TRACKING AREA UPDATE ACCEPT message. The default value of this timer is identical to the value of T3412.NOTE 4: The value of this timer is provided by the network operator when a service request for CS fallback is rejected by the network with EMM cause #39 "CS service temporarily not available".NOTE 5: The default value of this timer is used if the network does not indicate a value in the TRACKING AREA UPDATE ACCEPT message and the UE does not have a stored value for this timer.NOTE 6: The conditions for which this applies are described in clause 5.5.3.2.6.NOTE 7: In NB-S1 mode, the timer value shall be calculated as described in clause 4.7.NOTE 8: In WB-S1 mode, if the UE supports CE mode B and operates in either CE mode A or CE mode B, then the timer value is as described in this table for the case of WB-S1/CE mode (see clause 4.8).NOTE 9: It is possible that the UE does not stop or start timer T3440 upon receipt of ESM DATA TRANSPORT message as described in clause 5.3.1.2.1.NOTE 10: The timer value is provided by the network in the ATTACH ACCEPT, TRACKING AREA UPDATE ACCEPT, SERVICE ACCEPT, SERVICE REJECT or REGISTRATION ACCEPT message, or chosen randomly from a default value range of 15 – 30 minutes.NOTE 11: If the timer is started due to a UE configured for eCall only mode moving from GERAN/UTRAN to E-UTRAN with timer T3242 (see 3GPP TS 24.008 [13]) running, the UE starts the timer with a value set to the time left on timer T3242. Otherwise the UE starts the timer with a value set to 12 hours.NOTE 12: If the timer is started due to a UE configured for eCall only mode moving from GERAN/UTRAN to E-UTRAN with timer T3243 (see 3GPP TS 24.008 [13]) running, the UE starts the timer with a value set to the time left on timer T3243. Otherwise the UE starts the timer with a value set to 12 hours.NOTE 13: Based on implementation, the timer may be set to a value between 250ms and 5s when the MUSIM UE indicates "NAS signalling connection release" or "Rejection of paging" in the UE request type IE of the EXTENDED SERVICE REQUEST message or CONTROL PLANE SERVICE REQUEST message.NOTE 14: Based on implementation, the timer may be set to a value between 250ms and 10s when the MUSIM UE indicated "NAS signalling connection release" or "Rejection of paging" in the UE request type IE of the EXTENDED SERVICE REQUEST message or CONTROL PLANE SERVICE REQUEST message; or indicated "NAS signalling connection release" in the UE request type IE of the TRACKING AREA UPDATE REQUEST message.NOTE 15: In satellite E-UTRAN access, the value for WB-S1/CE mode shall be selected when satellite E-UTRAN RAT type is "WB-E-UTRAN(MEO)", " WB-E-UTRAN(GEO)", "NB-IoT(MEO)", "NB-IoT(GEO)", "LTE-M(MEO)" or "LTE-M(GEO)". |

Table 10.2.2: EPS mobility management timers – network side

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TIMER NUM. | TIMER VALUE | STATE  | CAUSE OF START | NORMAL STOP | ON THE1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| T3413NOTE 8 NOTE 10 | NOTE 2 | EMM-REGISTERED | Paging procedure for EPS services initiated | Paging procedure for EPS services completedPaging procedure is aborted | Network dependent |
| T3415 NOTE 8NOTE 10 | NOTE 6 | EMM-REGISTERED | Paging procedure for EPS services initiated for a UE which the network accepted the request to use eDRX and the UE does not have a PDN connection for emergency bearer services | Paging procedure for EPS services completedPaging procedure is aborted | Paging procedure is aborted and the network proceeds as specified in 3GPP TS 23.401 [10] |
| T3422NOTE 7NOTE 9 | 6sIn WB-S1/CE mode, 24sNOTE 11 | EMM-DEREGISTERED-INITIATED | DETACH REQUEST sent | DETACH ACCEPT received | Retransmission of DETACH REQUEST |
| T3447 | NOTE 2 | All | UE transitions from EMM-CONNECTED mode to EMM-IDLE mode except when UE was in EMM-CONNECTED mode due to paging, attach without PDN connection or tracking area update request without "active" or "signalling active" flag setUE transitions from 5GMM-CONNECTED mode to 5GMM-IDLE mode except when UE was in 5GMM-CONNECTED mode due to paging, REGISTRATION REQUEST for initial registration with Follow-on request indicator set to "No follow-on request pending", or REGISTRATION REQUEST for mobility and periodic registration update with Follow-on request indicator set to "No follow-on request pending" and without Uplink data status IE included. | ATTACH ACCEPT or TRACKING AREA UPDATE ACCEPT without the T3447 value IE. At MME during inter-system change from S1 mode to N1 mode.REGISTRATION ACCEPT without the T3447 value IE (defined in 3GPP TS 24.501 [54]). CONFIGURATION UPDATE COMMAND with the T3447 value IE set to zero or deactivated (defined in 3GPP TS 24.501 [54]). At AMF during inter-system change from N1 mode to S1 mode defined in 3GPP TS 24.501 [54]). | Allow the UE to initiate a connection for transfer of uplink user data. |
| T3450NOTE 7NOTE 9 | 6sIn WB-S1/CE mode, 18sNOTE 11 | EMM-COMMON-PROC-INIT | ATTACH ACCEPT sentTRACKING AREA UPDATE ACCEPT sent with GUTITRACKING AREA UPDATE ACCEPT sent with TMSIGUTI REALLOCATION COMMAND sent | ATTACH COMPLETE receivedTRACKING AREA UPDATE COMPLETE receivedGUTI REALLOCATION COMPLETE received | Retransmission of the same message type, i.e. ATTACH ACCEPT, TRACKING AREA UPDATE ACCEPT or GUTI REALLOCATION COMMAND |
| T3460NOTE 7NOTE 9 | 6sIn WB-S1/CE mode, 24sNOTE 11 | EMM-COMMON-PROC-INIT | AUTHENTICATION REQUEST sentSECURITY MODE COMMAND sent | AUTHENTICATION RESPONSE receivedAUTHENTICATION FAILURE receivedSECURITY MODE COMPLETE receivedSECURITY MODE REJECT received | Retransmission of the same message type, i.e. AUTHENTICATION REQUESTor SECURITY MODE COMMAND |
| T3470NOTE 7NOTE 9 | 6sIn WB-S1 mode, 24sNOTE 11 | EMM-COMMON-PROC-INIT | IDENTITY REQUEST sent | IDENTITY RESPONSE received | Retransmission of IDENTITY REQUEST |
| Mobile reachable | NOTE 4 | All except EMM-DEREGISTERED | Entering EMM-IDLE mode | NAS signalling connection established | Network dependent, but typically paging is halted on 1st expiry if the UE is not attached for emergency bearer services.Implicitly detach the UE which is attached for emergency bearer services. |
| Implicit detach timer | NOTE 3 | All except EMM-DEREGISTERED | The mobile reachable timer expires while the network is in EMM-IDLE mode  | NAS signalling connection established | Implicitly detach the UE on 1st expiry |
| active timer | NOTE 5 | All except EMM-DEREGISTERED | Entering EMM-IDLE mode | NAS signalling connection established | Network dependent, but typically paging is halted on 1st expiry  |
| NOTE 1: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.NOTE 2: The value of this timer is network dependent.NOTE 3: The value of this timer is network dependent. If ISR is activated, the default value of this timer is 4 minutes greater than T3423.NOTE 4: The default value of this timer is 4 minutes greater than T3412. If T3346 is larger than T3412 and the MME includes timer T3346 in the TRACKING AREA UPDATE REJECT message or SERVICE REJECT message, the value of the mobile reachable timer and implicit detach timer is set such that the sum of the timer values is greater than T3346. If the UE is attached for emergency bearer services, the value of this timer is set equal to T3412.NOTE 5: If the MME includes timer T3324 in the ATTACH ACCEPT message or TRACKING AREA UPDATE ACCEPT message and if the UE is not attached for emergency bearer services and has no PDN connection for emergency bearer services, the value of this timer is equal to the value of timer T3324.NOTE 6: The value of this timer is smaller than the value of timer T3-RESPONSE (see 3GPP TS 29.274 [16D]).NOTE 7: In NB-S1 mode, then the timer value shall be calculated as described in clause 4.7.NOTE 8: In NB-S1 mode, then the timer value shall be calculated by using an NAS timer value which is network dependent.NOTE 9: In WB-S1 mode, if the UE supports CE mode B and operates in either CE mode A or CE mode B, then the timer value is as described in this table for the case of WB-S1/CE mode (see clause 4.8).NOTE 10: In WB-S1 mode, if the UE supports CE mode B, then the timer value shall be calculated by using an NAS timer value which value is network dependent.NOTE 11: In satellite E-UTRAN access, the value for WB-S1/CE mode shall be selected when satellite E-UTRAN RAT type is "WB-E-UTRAN(MEO)", " WB-E-UTRAN(GEO)", "NB-IoT(MEO)", "NB-IoT(GEO)", "LTE-M(MEO)" or "LTE-M(GEO)". |

\* \* \* Next Change \* \* \* \*

## 10.3 Timers of EPS session management

Table 10.3.1: EPS session management timers – UE side

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TIMER NUM. | TIMER VALUE | STATE | CAUSE OF START | NORMAL STOP | ON THE1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| T3480NOTE 2NOTE 3 | 8sIn WB-S1/CE mode, 16sNOTE 4 | PROCEDURE TRANSACTION PENDING | BEARER RESOURCE ALLOCATION REQUEST sent | ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST received or MODIFY EPS BEARER CONTEXT REQUEST received or BEARER RESOURCE ALLOCATION REJECT received | Retransmission of BEARER RESOURCE ALLOCATION REQUEST |
| T3481 NOTE 2 NOTE 3 | 8sIn WB-S1/CE mode, 16sNOTE 4 | PROCEDURE TRANSACTION PENDING | BEARER RESOURCE MODIFICATION REQUEST sent | ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST received or MODIFY EPS BEARER CONTEXT REQUEST received or DEACTIVATE EPS BEARER CONTEXT REQUEST received or BEARER RESOURCE MODIFICATION REJECT received | Retransmission of BEARER RESOURCE MODIFICATION REQUEST |
| T3482 NOTE 2 NOTE 3 | 8sIn WB-S1/CE mode, 16sNOTE 4 | PROCEDURE TRANSACTION PENDING | An additional PDN connection is requested by the UE which is not combined in attach procedure | ACTIVE DEFAULT EPS BEARER CONTEXT REQUEST received or PDN CONNECTIVITY REJECT received | Retransmission of PDN CONNECTIVITY REQUEST |
| T3492 NOTE 2 NOTE 3 | 6sIn WB-S1/CE mode, 14sNOTE 4 | PROCEDURE TRANSACTION PENDING | PDN DISCONNECT REQUEST sent | DEACTIVATE EPS BEARER CONTEXT REQUEST received or PDN DISCONNECT REJECT received | Retransmission of PDN DISCONNECT REQUEST |
| T3493 NOTE 2NOTE 3 | 4sIn WB-S1/CE mode, 12sNOTE 4 | PROCEDURE TRANSACTION PENDING | REMOTE UE REPORT sent | REMOTE UE REPORT RESPONSE received | Retransmission of REMOTE UE REPORT |
| Back-off timer |  |  | defined in 3GPP TS 24.008 [13] |  |  |
| NOTE 1: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.NOTE 2: In NB-S1 mode, then the timer value shall be calculated as described in clause 4.7.NOTE 3: In WB-S1 mode, if the UE supports CE mode B and operates in either CE mode A or CE mode B, then the timer value is as described in this table for the case of WB-S1/CE mode (see clause 4.8).NOTE 4: In satellite E-UTRAN access, the value for WB-S1/CE mode shall be selected when satellite E-UTRAN RAT type is "WB-E-UTRAN(MEO)", " WB-E-UTRAN(GEO)", "NB-IoT(MEO)", "NB-IoT(GEO)", "LTE-M(MEO)" or "LTE-M(GEO)". |

NOTE 1: The back-off timer is used to describe a logical model of the required UE behaviour. This model does not imply any specific implementation, e.g. as a timer or timestamp.

NOTE 2: Reference to back-off timer in this section can either refer to use of timer T3396 or to use of a different packet system specific timer within the UE. Whether the UE uses T3396 as a back-off timer or it uses different packet system specific timers as back-off timers is left up to UE implementation.

Table 10.3.2: EPS session management timers – network side

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TIMER NUM. | TIMER VALUE | STATE | CAUSE OF START | NORMAL STOP | ON THE1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| T3485 NOTE 2 NOTE 3 | 8sIn WB-S1/CE mode, 16sNOTE 4 | BEARER CONTEXT ACTIVE PENDING | ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST sentACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST sent | ACTIVATE DEFAULT EPS BEARER CONTEXT ACCEPT receivedor ACTIVATE DEFAULT EPS BEARER CONTEXT REJECT receivedor ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT receivedor ACTIVATE DEDICATED EPS BEARER CONTEXT REJECT received | Retransmission of the same message |
| T3486 NOTE 2 NOTE 3 | 8sIn WB-S1/CE mode, 16sNOTE 4 | BEARER CONTEXT MODIFY PENDING | MODIFY EPS BEARER CONTEXT REQUEST sent | MODIFY EPS BEARER CONTEXT ACCEPT receivedor MODIFY EPS BEARER CONTEXT REJECT received | Retransmission of MODIFY EPS BEARER CONTEXT REQUEST |
| T3489 NOTE 2 NOTE 3 | 4sIn WB-S1/CE mode, 12sNOTE 4 | PROCEDURE TRANSACTION PENDING | ESM INFORMATION REQUEST sent | ESM INFORMATION RESPONSE received | Retransmission of ESM INFORMATION REQUEST on 1st and 2nd expiry only |
| T3495 NOTE 2 NOTE 3 | 8sIn WB-S1/CE mode, 16sNOTE 4 | BEARER CONTEXT INACTIVE PENDING | DEACTIVATE EPS BEARER CONTEXT REQUEST sent | DEACTIVATE EPS BEARER CONTEXT ACCEPT received | Retransmission of DEACTIVATE EPS BEARER CONTEXT REQUEST |
| NOTE 1: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.NOTE 2: In NB-S1 mode, then the timer value shall be calculated as described in clause 4.7.NOTE 3: In WB-S1 mode, if the UE supports CE mode B and operates in either CE mode A or CE mode B, then the timer value is as described in this table for the case of WB-S1/CE mode (see clause 4.8).NOTE 4: In satellite E-UTRAN access, the value for WB-S1/CE mode shall be selected when satellite E-UTRAN RAT type is "WB-E-UTRAN(MEO)", " WB-E-UTRAN(GEO)", "NB-IoT(MEO)", "NB-IoT(GEO)", "LTE-M(MEO)" or "LTE-M(GEO)". |

\* \* \* End of Changes \* \* \* \*