**3GPP TSG-CT WG1 Meeting #136-eC1-224087**

**E-Meeting, 12th – 20th May 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **4174** | **rev** | **3** | **Current version:** | **17.6.1** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Completion of service-level-AA procedure | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ID\_UAS | | | | |  | ***Date:*** | | | 2022-04-29 |
|  |  | | | |  | |  | | |  |
| ***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 can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For service-level-AA procedure, timer T3xyz has not been defined yet.  In addition, timer stop/start operation is missing and timer expiry case is missing | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | T3594 is defined  Abnormal case is added for the case of T3594 expiry  Timer start/stop operation in the timer table | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Timer operation for service-level-AA procedure cannot complete | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.1A.1, 6.3.1A.2, 6.3.1A.3, 6.3.1A.4, 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:*** | | Rev2 was submitted due to wrong file for the rev 1 was uploadded to 3GPP portal. Missing comma was added.  Rev3 typo in the figure 6.3.1A.1-1 was fixed | | | | | | | | |

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

#### 6.3.1A.1 General

The purpose of the service-level authentication and authorization (service-level-AA) procedure is to enable the DN using NEF services for authentication:

a) to authenticate the upper layers of the UE, when establishing the PDU session;

b) to authorize the upper layers of the UE, when establishing the PDU session;

c) both of the above; or

d) to re-authenticate the upper layers of the UE after establishment of the PDU session.

The service-level authentication and authorization procedure is used for UUAA as specified in TS 23.256 [6AB].

NOTE 1: The authentication protocol for UUAA is out of scope of 3GPP in this release of specification.

The service-level authentication and authorization procedure can be performed only during or after the UE-requested PDU session procedure establishing a non-emergency PDU session. The service-level authentication and authorization procedure shall not be performed during or after the UE-requested PDU session establishment procedure establishing an emergency PDU session.

If the service-level authentication and authorization procedure is performed during the UE-requested PDU session establishment procedure:

a) and the service-level-AA procedure of the UE completes successfully, the service-level-AA response is transported from the network to the UE as a part of the UE-requested PDU session establishment procedure in the PDU SESSION ESTABLISHMENT ACCEPT message; or

b) and the service-level-AA procedure of the UE completes unsuccessfully, the service-level-AA response is transported from the network to the UE as a part of the UE-requested PDU session establishment procedure in the PDU SESSION ESTABLISHMENT REJECT message.

NOTE 2: If the SMF receives the HTTP code set to "4xx" or "5xx" as specified in 3GPP TS 29.500 [20AA] or the SMF detects a UUAA-SM failure as specified in 3GPP TS 29.256 [21B], then the SMF considers that the UUAA-SM procedure has completed unsuccessfully.

If the service-level authentication and authorization procedure is performed for the established PDU session with re-authentication purpose:

a) and the service-level-AA procedure of the UE completes successfully, the service-level-AA response is transported from the network to the UE as a part of the network-requested PDU session modification procedure in the PDU SESSION MODIFICATION COMMAND message; or

b) and the service-level-AA procedure of the UE completes unsuccessfully, the service-level-AA response is transported from the network to the UE as a part of the network-requested PDU session release procedure in the PDU SESSION RELEASE COMMAND message.

There can be several rounds of exchange of a service-level-AA payload for the service to complete the service-level authentication and authorization of the request for a PDU session (see example in figure 6.3.1A.1-1).

If the UE receives the service-level-AA response in the PDU SESSION ESTABLISHMENT ACCEPT message or the PDU SESSION ESTABLISHMENT REJECT message, the UE passes it to the upper layer.

Figure 6.3.1A.1-1: Service-level authentication and authorization procedure

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

#### 6.3.1A.2 Service-level authentication and authorization procedure initiation

In order to initiate the service-level authentication and authorization procedure, the SMF shall create a SERVICE-LEVEL AUTHENTICATION COMMAND message.

The SMF shall set the PTI IE of the SERVICE-LEVEL AUTHENTICATION COMMAND message to "No procedure transaction identity assigned".

The SMF shall set the Service-level-AA payload IE in the Service-level-AA container IE of the SERVICE-LEVEL AUTHENTICATION COMMAND message to the service-level-AA payload provided by the DN via the NEF.

NOTE : In case of UUAA, the service-level-AA payload is provided by the DN via the UAS-NF.

The SMF shall send the SERVICE-LEVEL AUTHENTICATION COMMAND message, and the SMF shall start timer T3594 (see example in figure 6.3.1A.1-1).

Upon receipt of a SERVICE-LEVEL AUTHENTICATION COMMAND message and a PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5, the UE passes to the upper layers the service-level-AA payload received in the Service-level-AA container IE of the SERVICE-LEVEL AUTHENTICATION COMMAND message. Apart from this action, the service-level authentication and authorization procedure initiated by the DN is transparent to the 5GSM layer of the UE.

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

#### 6.3.1A.3 Service-level authentication and authorization procedure accepted by the UE

When the upper layers provide a service-level-AA payload, the UE shall create a SERVICE-LEVEL AUTHENTICATION COMPLETE message and set the Service-level-AA payload IE of the Service-level-AA container IE to the service-level-AA payload received from the upper layers.

The UE shall transport the SERVICE-LEVEL AUTHENTICATION COMPLETE message and the PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5. Apart from this action, the service-level authentication and authorization procedure initiated by the DN is transparent to the 5GSM layer of the UE.

Upon receipt of a SERVICE-LEVEL AUTHENTICATION COMPLETE message, the SMF shall stop timer T3594 and provides the service-level-AA payload received in the Service-level-AA container IE of the SERVICE-LEVEL AUTHENTICATION COMPLETE message to the DN.

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

#### 6.3.1A.4 Abnormal cases on the network side

The following abnormal cases can be identified:

a) Expiry of timer T3594.

On the first expiry of the timer T3594, the SMF shall resend the SERVICE-LEVEL AUTHENTICATION COMMAND message and shall reset and restart timer T3594. This retransmission is repeated four times, i.e., on the fifth expiry of timer T3594, the SMF shall abort the procedure and send PDU SESSION ESTABLISHMENT REJECT message with the 5GSM cause #29 "user authentication or authorization failed" as specified in subclause 6.4.1.4.1.

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

## 10.3 Timers of 5GS session management

Timers of 5GS session management are shown in table 10.3.1 and table 10.3.2.

NOTE: Timer T3396 is defined in 3GPP TS 24.008 [12].

Table 10.3.1: Timers of 5GS session management – UE side

| TIMER NUM. | TIMER VALUE | STATE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| --- | --- | --- | --- | --- | --- |
| T3580  NOTE 4  NOTE 5 | 16s  In WB-N1/CE mode, 24s  For access via a satellite NG-RAN cell, 21s | PDU SESSION ACTIVE PENDING | Transmission of PDU SESSION ESTABLISHMENT REQUEST message | PDU SESSION ESTABLISHMENT ACCEPT message received or  PDU SESSION ESTABLISHMENT REJECT message received or  PDU SESSION ESTABLISHMENT REQUEST received in a DL NAS TRANSPORT message with 5GMM cause #22, #28, #65. #67, #69, #90, #91 or #92 | Retransmission of PDU SESSION ESTABLISHMENT REQUEST message |
| T3581  NOTE 4  NOTE 5 | 16s  In WB-N1/CE mode, 24s  For access via a satellite NG-RAN cell, 21s | PDU SESSION MODIFICATION PENDING | Transmission of PDU SESSION MODIFICATION REQUEST message | PDU SESSION MODIFICATION COMMAND message with the same PTI is received or PDU SESSION MODIFICATION REJECT message received or  PDU SESSION MODIFICATION REQUEST received in a DL NAS TRANSPORT message with 5GMM cause #22, #28. #67, #69, or #90 | Retransmission of PDU SESSION MODIFICATION REQUEST message |
| T3582  NOTE 4  NOTE 5 | 16s  In WB-N1/CE mode, 24s  For access via a satellite NG-RAN cell, 21s | PDU SESSION INACTIVE PENDING | Transmission of PDU SESSION RELEASE REQUEST message | PDU SESSION RELEASE COMMAND message with the same PTI is received or PDU SESSION RELEASE REJECT message received | Retransmission of PDU SESSION RELEASE REQUEST message |
| T3583 | Default 1 min.  NOTE 2 | PDU SESSION ACTIVE | UE creates or updates a derived QoS rule | UE deletes the derived QoS rule (see subclause 6.2.5.1.4.5) | On 1st expiry: Deletion of the derived QoS rule |
| T3584 | NOTE 3 | PDU SESSION ACTIVE PENDING  PDU SESSION MODIFICATION PENDING  PDU SESSION ACTIVE or PDU SESSION INACTIVE PENDING | PDU SESSION ESTABLISHMENT REJECT, PDU SESSION MODIFICATION REJECT, or PDU SESSION RELEASE COMMAND received with 5GSM cause #67 and with a timer value for T3584  PDU SESSION ESTABLISHMENT REQUEST, or PDU SESSION MODIFICATION REQUEST received in a DL NAS TRANSPORT message with 5GMM cause #67 and with a timer value for T3584 (see subclause 5.4.5.3.3) | PDU SESSION RELEASE COMMAND (see NOTE 6) or PDU SESSION MODIFICATION COMMAND or PDU SESSION AUTHENTICATION COMMAND or DEREGISTRATION REQUEST with the re-registration type "re-registration required" | None |
| T3585 | NOTE 3 | PDU SESSION ACTIVE PENDING  PDU SESSION MODIFICATION PENDING  PDU SESSION ACTIVE or PDU SESSION INACTIVE PENDING | PDU SESSION ESTABLISHMENT REJECT, PDU SESSION MODIFICATION REJECT, or PDU SESSION RELEASE COMMAND received with 5GSM cause #69 and with a timer value for T3585  PDU SESSION ESTABLISHMENT REQUEST, or PDU SESSION MODIFICATION REQUEST received in a DL NAS TRANSPORT message with 5GMM cause #69 and with a timer value for T3585(see subclause 5.4.5.3.3) | PDU SESSION RELEASE COMMAND (see NOTE 6) or PDU SESSION MODIFICATION COMMAND or PDU SESSION AUTHENTICATION COMMAND or DEREGISTRATION REQUEST with the re-registration type "re-registration required" | None |
| Back-off timer |  |  | defined in 3GPP TS 24.008 [12] |  |  |
| T3586 NOTE 4  NOTE 5 | 8s  In WB-N1/CE mode, 16s  For access via a satellite NG-RAN cell, 13s | PDU SESSION ACTIVE | REMOTE UE REPORT sent | REMOTE UE REPORT RESPONSE received | Retransmission of REMOTE UE REPORT |
| 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 network may provide the value of this timer applicable to the derived QoS rules of a specific PDU session as RQ timer value in the PDU SESSION ESTABLISHMENT ACCEPT message and PDU SESSION MODIFICATION COMMAND message. The maximum value of the timer is 30 min. If the network indicates a value greater than the maximum value, then the UE shall use the maximum value.  NOTE 3: The value of this timer is provided by the network.  NOTE 4: In NB-N1 mode, then the timer value shall be calculated as described in subclause 4.18.  NOTE 5: In WB-N1 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-N1/CE mode (see subclause 4.20).  NOTE 6: If the PDU SESSION RELEASE COMMAND message includes the Back-off timer value IE where the timer value indicates neither zero nor deactivated and the 5GSM cause is not #39, the UE then starts the timer with the value provided in the Back-off timer value IE after stopping the existing timer (see subclause 6.3.3.3). | | | | | |

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 of 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: Timers of 5GS session management – SMF side

| TIMER NUM. | TIMER VALUE | STATE | CAUSE OF START | NORMAL STOP | ON  THE 1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| --- | --- | --- | --- | --- | --- |
| T3590  NOTE 3  NOTE 4 | 15s  In WB-N1/CE mode, 23s  For access via a satellite NG-RAN cell, 21s | PROCEDURE TRANSACTION PENDING | Transmission of PDU SESSION AUTHENTICATION COMMAND message | PDU SESSION AUTHENTICATION COMPLETE message received | Retransmission of PDU SESSION AUTHENTICATION COMMAND message |
| T3591  NOTE 3  NOTE 4 | 16s  In WB-N1/CE mode, 24s  For access via a satellite NG-RAN cell, 22s | PDU SESSION MODIFICATION PENDING | Transmission of PDU SESSION MODIFICATION COMMAND message | PDU SESSION MODIFICATION COMPLETE message received or PDU SESSION MODIFICATION COMMAND REJECT message received | Retransmission of PDU SESSION MODIFICATION COMMAND message |
| T3592  NOTE 3  NOTE 4 | 16s  In WB-N1/CE mode, 24s  For access via a satellite NG-RAN cell, 22s | PDU SESSION INACTIVE PENDING | Transmission of PDU SESSION RELEASE COMMAND message | PDU SESSION RELEASE COMPLETE message received or  N1 SM delivery skipped indication received | Retransmission of PDU SESSION RELEASE COMMAND message |
| T3593  NOTE 3  NOTE 4 | Default  60s  (NOTE 2) | PDU SESSION MODIFICATION PENDING | Reception of PDU SESSION MODIFICATION COMPLETE message for transmitted PDU SESSION MODIFICATION COMMAND message where the PDU SESSION MODIFICATION COMMAND message included 5GSM cause #39 | PDU SESSION RELEASE REQUEST message received | Network-requested PDU session release procedure performed |
| T3594  NOTE 3  NOTE 4 | 15s  In WB-N1/CE mode, 23s  For access via a satellite NG-RAN cell, 21s | PROCEDURE TRANSACTION PENDING | Transmission of SERVICE-LEVEL AUTHENTICATION COMMAND message | SERVICE-LEVEL AUTHENTICATION COMPLETE message received | Retransmission of SERVICE-LEVEL AUTHENTICATION COMMAND message |
| 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: If the PDU Session Address Lifetime value is sent to the UE in the PDU SESSION MODIFICATION COMMAND message then timer T3593 shall be started with the same value, otherwise it shall use a default value.  NOTE 3: In NB-N1 mode, the timer value shall be calculated as described in subclause 4.18.  NOTE 4: In WB-N1 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-N1/CE mode (see subclause 4.20). | | | | | |

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