**3GPP TSG-CT WG1 Meeting #128-eC1-21xxxx**

**Electronic meeting, 25 February - 5 March 2021 *was* C1-211105**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.193** | **CR** | **0026** | **rev** | **1** | **Current version:** | **16.2.0** |  |
|  |
| *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 | **x** | Radio Access Network |  | Core Network | **x** |

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|  |
| ***Title:***  | Numbering the timers used in PMFP |
|  |  |
| ***Source to WG:*** | ZTE, Ericsson |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ATSSS |  | ***Date:*** | 2021-02-25 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)* |
|  |  |
| ***Reason for change:*** | The timers Tx, Ty and Tz used in PMFP need to be identified by numbers. Tx and Tz are used on UE side while Ty is used on UPF side. The proposal is using T1xx for timers on UE side and T2xx for timers on UPF side. |
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| ***Summary of change:*** | Number the timers Tx, Tz and Ty with T101, T102 and T201 respectively. |
|  |  |
| ***Consequences if not approved:*** | Timers used in PMFP are not identified by numbers. |
|  |  |
| ***Clauses affected:*** | 5.4.3.2, 5.4.3.3, 5.4.3.4, 5.4.4.2, 5.4.4.3, 5.4.4.4, 5.4.5.2, 5.4.5.3, 5.4.5.4, 7.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* 1st Change \* \* \* \*

#### 5.4.3.2 UE-initiated RTT measurement procedure initiation

In order to initiate a UE-initiated RTT measurement procedure over an access of an MA PDU session, the UE shall allocate an EPTI value as specified in clause 5.4.2.2 and shall create one or more PMFP ECHO REQUEST messages. The number of created PMFP ECHO REQUEST messages is UE implementation specific. In each PMFP ECHO REQUEST message, the UE:

a) shall set the EPTI IE to the allocated EPTI value;

b) shall set the RI IE to a unique value identifying the particular PMFP ECHO REQUEST message within the transaction; and.

c) if the upper layers request a particular length of PMFP messages, shall include the Padding IE such that length of the PMFP message becomes equal to the requested length.

The UE shall start a timer T101 and shall send the one or more PMFP ECHO REQUEST messages over the access of the MA PDU session.

An example of the UE-initiated RTT measurement procedure is shown in figure 5.3.3.2-1.



Figure 5.4.3.2-1: UE-initiated RTT measurement procedure

#### 5.4.3.3 UE-initiated RTT measurement procedure completion

Upon reception of the PMFP ECHO REQUEST message, the UPF shall create a PMFP ECHO RESPONSE message. In the PMFP ECHO RESPONSE message, the UPF shall set the EPTI IE to the EPTI value in the PMFP ECHO REQUEST message and shall set the RI IE to the RI value in the PMFP ECHO REQUEST message. If the PMFP ECHO REQUEST message contains the Padding IE, the UPF shall include the Padding IE such that length of the PMFP message becomes equal to length of the received PMFP message. The UPF shall send the PMFP ECHO RESPONSE message over the access of the MA PDU session via which the PMFP ECHO REQUEST message was received.

Upon reception of a PMFP ECHO RESPONSE message with the same EPTI as the allocated EPTI value and with the RI value of a sent PMFP ECHO REQUEST message, the UE shall determine the RTT value for the request identified by the RI value by subtracting the current value of the timer T101 from the value of the timer T101 valid when the PMFP ECHO REQUEST with the RI value was sent.

When a PMFP ECHO RESPONSE message with the same EPTI as the allocated EPTI value has been received for each sent PMFP ECHO REQUEST message, the UE shall calculate an average of the RTT values for the requests, shall stop the timer T101.

#### 5.4.3.4 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Expiration of the timer T101

 Upon expiration of the timer T101, the UE shall abort the procedure, shall calculate an average of the RTT values for the requests for which a response was received and shall count the number of requests for which no response was received.

\* \* \* 2nd Change \* \* \* \*

#### 5.4.4.2 UPF-initiated RTT measurement procedure initiation

In order to initiate a UPF-initiated RTT measurement procedure over an access of an MA PDU session, the UPF shall allocate a EPTI value as specified in clause 5.4.2.2 and shall create one or more PMFP ECHO REQUEST messages. The number of created PMFP ECHO REQUEST messages is UPF implementation specific. In each PMFP ECHO REQUEST message, the UPF:

a) shall set the EPTI IE to the allocated EPTI value;

b) shall set the RI IE to a unique value identifying the particular PMFP ECHO REQUEST message within the transaction; and

c) if the upper layers request a particular length of PMFP messages, shall include the Padding IE such that length of the PMFP message becomes equal to the requested length.

The UPF shall start a timer T201 and shall send the one or more PMFP ECHO REQUEST messages over the access of the MA PDU session.

An example of the UPF-initiated RTT measurement procedure is shown in figure 5.4.4.2-1.



Figure 5.4.4.2-1: UPF-initiated RTT measurement procedure

#### 5.4.4.3 UPF-initiated RTT measurement procedure completion

Upon reception of the PMFP ECHO REQUEST message, the UE shall create a PMFP ECHO RESPONSE message. In the PMFP ECHO RESPONSE message, the UE shall set the EPTI IE to the EPTI value in the PMFP ECHO REQUEST message and shall set the RI IE to the RI value in the PMFP ECHO REQUEST message. If the PMFP ECHO REQUEST message contains the Padding IE, the UE shall include the Padding IE such that length of the PMFP message becomes equal to length of the received PMFP message. The UE shall send the PMFP ECHO RESPONSE message over the access of the MA PDU session via which the PMFP ECHO REQUEST message was received.

Upon reception of a PMFP ECHO RESPONSE message with the same EPTI as the allocated EPTI value and with the RI value of a sent PMFP ECHO REQUEST message, the UPF shall determine the RTT value for the request identified by the RI value by subtracting the current value of the timer T201 from the starting value of the timer T201 valid when the PMFP ECHO REQUEST with the RI value was sent.

When a PMFP ECHO RESPONSE message with the same EPTI as the allocated EPTI value has been received for each sent PMFP ECHO REQUEST message, the UPF shall calculate an average of the RTT values for the requests, shall stop the timer T201.

#### 5.4.4.4 Abnormal cases in the network

The following abnormal cases can be identified:

a) Expiration of the timer T201

 Upon expiration of the timer T201, the UPF shall abort the procedure, shall calculate an average of the RTT values for the requests for which a response was received and shall count the number of requests for which no response was received.

\* \* \* 3rd Change \* \* \* \*

#### 5.4.5.2 Access availability or unavailability report procedure initiation

In order to initiate an access availability or unavailability report procedure over an access of an MA PDU session, the UE shall allocate a EPTI value as specified in clause 5.4.2.2 and shall create a PMFP ACCESS REPORT message. In the PMFP ACCESS REPORT message, the UE shall set the EPTI IE to the allocated EPTI value. The UE shall send the PMFP ACCESS REPORT message over the access of the MA PDU session and shall start a timer T102.

An example of the access availability or unavailability report procedure is shown in figure 5.4.5.2-1.



Figure 5.4.5.2-1: Access availability or unavailability report procedure

#### 5.4.5.3 Access availability or unavailability report procedure completion

Upon reception of the PMFP ACCESS REPORT message, the UPF shall create a PMFP ACKNOWLEDGEMENT message. In the PMFP ACKNOWLEDGEMENT message, the UPF shall set the EPTI IE to the EPTI value in the PMFP ACCESS REPORT message. The UPF shall send the PMFP ACKNOWLEDGEMENT message over the access of the MA PDU session via which the PMFP ACCESS REPORT message was received.

Upon reception of a PMFP ACKNOWLEDGEMENT message with the same EPTI as the allocated EPTI value, the UE shall stop the timer T102.

#### 5.4.5.4 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Expiry of the timer T102

 The UE shall, on the first expiry of the timer T102, retransmit the PMFP ACCESS REPORT message and shall reset and start timer T102. This retransmission can be repeated up to four times, i.e. on the fifth expiry of timer T102, the UE shall abort the procedure.

\* \* \* 4th Change \* \* \* \*

## 7.2 Timers of performance measurement function (PMF) protocol (PMFP)

Timers of PMFP are shown in table 7.2-1 and table 7.2-2.

Table 7.2-1: Timers of PMFP – UE side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ONTHE1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| --- | --- | --- | --- | --- |
| T101 | 1s | Transmission of the first PMFP ECHO REQUEST message | A PMFP ECHO RESPONSE message received for each sent PMFP ECHO REQUEST message | Abort of the procedure. |
| T102 | NOTE 2 | Transmission of PMFP ACCESS REPORT message | PMFP ACKNOWLEDGEMENT message with the same EPTI is received  | Retransmission of PMFP ACCESS REPORT 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: Initial timer value is 500 milliseconds. The timer value doubles after each timer expiry, until set to 4 seconds. |

Table 7.2-2: Timers of PMFP – UPF side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ONTHE1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| --- | --- | --- | --- | --- |
| T201 | NOTE 2 | Transmission of the first PMFP ECHO REQUEST message | A PMFP ECHO RESPONSE message received for each sent PMFP ECHO REQUEST message | Abort of the procedure. |
| 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. |

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