**3GPP TSG-CT WG1 Meeting CT1#137-eC1-22xxxx**

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

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  |  | **CR** | **4457** | **rev** | **1** | **Current version:** |  |  |
|  |
| *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:***  | Remove secondary authentication for U2N relay |
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| ***Source to WG:*** | , China Telecom |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_ProSe |  | ***Date:*** | 2022-7-5 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)**Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | Based on the conclusion in SA#96 and the LS from SA in C1-224545, the secondary authentication for U2N relay is not specified in R17.So, the relataed procedure should be removed. |
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| ***Summary of change:*** | Remove the secondary authentication for U2N relay. |
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| ***Consequences if not approved:*** | Not align with stage-2 requirement. |
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| ***Clauses affected:*** | 6.3.1.1, 6.3.1.2.1, 6.3.1.2.2, 6.6.2.3, 8.3.4.1, 8.3.4.3, 8.3.5.1, 8.3.5.3, 8.3.20.1, 8.3.20.2, 8.3.20.3, 8.3.20.4, 9.11.4.35 |
|  |  |
|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\* First change \*\*\*\*\*

#### 6.3.1.1 General

The purpose of the PDU session authentication and authorization procedure is to enable the DN:

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

The upper layers store the association between a DNN and corresponding credentials, if any, for the PDU session authentication and authorization.

If the UE is registered for onboarding services in SNPN the SMF may initiate the PDU session authentication and authorization procedure based on local policy with a DCS as specified in 3GPP TS 33.501 [24] clause I.9.2.4.1 or a DN‑AAA server as specified in 3GPP TS 33.501 [24] clause I.9.2.4.2.

If the UE is registered for onboarding services in SNPN and the network initiates the PDU session authentication and authorization procedure, the UE shall use the default UE credentials for secondary authentication for the PDU session authentication and authorization procedure.

The network authenticates the UE using the Extensible Authentication Protocol (EAP) as specified in IETF RFC 3748 [34].

EAP has defined four types of EAP messages:

a) an EAP-request message;

b) an EAP-response message;

c) an EAP-success message; and

d) an EAP-failure message.

The EAP-request message is transported from the network to the UE using the PDU SESSION AUTHENTICATION COMMAND message of the PDU EAP message reliable transport procedure.

The EAP-response message to the EAP-request message is transported from the UE to the network using the PDU SESSION AUTHENTICATION COMPLETE message of the PDU EAP message reliable transport procedure.

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

a) and the DN authentication of the UE completes successfully, the EAP-success message is transported from the network to the UE as part of the UE-requested PDU session establishment procedure in the PDU SESSION ESTABLISHMENT ACCEPT message.

b) and the DN authentication of the UE completes unsuccessfully, the EAP-failure message is transported from the network to the UE as part of the UE-requested PDU session establishment procedure in the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU session authentication and authorization procedure is performed after the UE-requested PDU session establishment procedure:

a) and the DN authentication of the UE completes successfully, the EAP-success message is transported from the network to the UE using the PDU SESSION AUTHENTICATION RESULT message of the PDU EAP result message transport procedure.

b) and the DN authentication of the UE completes unsuccessfully, the EAP-failure message is transported from the network to the UE using the PDU SESSION RELEASE COMMAND message of the network-requested PDU session release procedure.

There can be several rounds of exchange of an EAP-request message and a related EAP-response message for the DN to complete the authentication and authorization of the request for a PDU session (see example in figure 6.3.1.1).

The SMF shall set the authenticator retransmission timer specified in IETF RFC 3748 [34] subclause 4.3 to infinite value.

NOTE: The PDU session authentication and authorization procedure provides a reliable transport of EAP messages and therefore retransmissions at the EAP layer of the SMF do not occur.



Figure 6.3.1.1: PDU session authentication and authorization procedure

\*\*\*\*\* Next change \*\*\*\*\*

##### 6.3.1.2.1 PDU EAP message reliable transport procedure initiation

In order to initiate the PDU EAP message reliable transport procedure, the SMF shall create a PDU SESSION AUTHENTICATION COMMAND message.

The SMF shall set the PTI IE of the PDU SESSION AUTHENTICATION COMMAND message to "No procedure transaction identity assigned".

The SMF shall set the EAP message IE of the PDU SESSION AUTHENTICATION COMMAND message to the EAP-request message provided by the DN or generated locally.

The SMF shall send the PDU SESSION AUTHENTICATION COMMAND message, and the SMF shall start timer T3590 (see example in figure 6.3.1.1).

Upon receipt of the PDU SESSION AUTHENTICATION COMMAND message, if the UE provided a DNN during the PDU session establishment, the UE shall stop timer T3396, if it is running for the DNN provided by the UE. If the UE did not provide a DNN during the PDU session establishment, the UE shall stop the timer T3396 associated with no DNN if it is running.

Upon receipt of the PDU SESSION AUTHENTICATION COMMAND message, if the UE provided an S-NSSAI and a DNN during the PDU session establishment, the UE shall stop timer T3584, if it is running for the [S-NSSAI of the PDU session, DNN] combination. If the UE provided a DNN but did not provide an S-NSSAI during the PDU session establishment, the UE shall stop timer T3584, if it is running for the same [no S-NSSAI, DNN] combination provided by the UE. If the UE provided an S-NSSAI but did not provide a DNN during the PDU session establishment, the UE shall stop timer T3584, if it is running for the same [S-NSSAI, no DNN] combination provided by the UE. If the UE provided neither a DNN nor an S-NSSAI during the PDU session establishment, the UE shall stop timer T3584, if it is running for the same [no S-NSSAI, no DNN] combination provided by the UE. The timer T3584 to be stopped includes the timer T3584 applied for all the PLMNs, if running, and the timer T3584 applied for the registered PLMN, if running.

Upon receipt of the PDU SESSION AUTHENTICATION COMMAND message, if the UE provided an S-NSSAI during the PDU session establishment, the UE shall stop timer T3585, if it is running for the S-NSSAI of the PDU session. If the UE did not provide an S-NSSAI during the PDU session establishment, the UE shall stop the timer T3585 associated with no S-NSSAI if it is running. The timer T3585 to be stopped includes the timer T3585 applied for all the PLMNs, if running, and the timer T3585 applied for the registered PLMN, if running.

NOTE 1: Upon receipt of the PDU SESSION AUTHENTICATION COMMAND message for a PDU session, if the UE provided a DNN (or no DNN) and an S-NSSAI (or no S-NSSAI) when the PDU session is established, timer T3396 associated with the DNN (or no DNN, if no DNN was provided by the UE) is running, and timer T3584 associated with the DNN (or no DNN, if no DNN was provided by the UE) and the S-NSSAI (or no S-NSSAI, if no S-NSSAI was provided by the UE) is running, then the UE stops both the timer T3396 and the timer T3584.

NOTE 2: Upon receipt of the PDU SESSION AUTHENTICATION COMMAND message for a PDU session, if the UE provided a DNN (or no DNN) and an S-NSSAI (or no S-NSSAI) when the PDU session is established, timer T3585 associated with the S-NSSAI (or no S-NSSAI, if no S-NSSAI was provided by the UE) is running, and timer T3584 associated with the DNN (or no DNN, if no DNN was provided by the UE) and the S-NSSAI (or no S-NSSAI, if no S-NSSAI was provided by the UE) is running, then the UE stops both the timer T3585 and the timer T3584.

Upon receipt of a PDU SESSION 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 EAP message received in the EAP message IE of the PDU SESSION AUTHENTICATION COMMAND message. Apart from this action and the stopping of timers T3396, T3584 and T3485 (if running), the authentication and authorization procedure initiated by the DN is transparent to the 5GSM layer of the UE.

\*\*\*\*\* Next change \*\*\*\*\*

##### 6.3.1.2.2 PDU EAP message reliable transport procedure accepted by the UE

The UE shall create a PDU SESSION AUTHENTICATION COMPLETE message when the upper layers provide an EAP-response message responding to the received EAP-request message.

The UE shall set the EAP message IE of the PDU SESSION AUTHENTICATION COMPLETE message to the EAP-response message.

The UE shall transport the PDU SESSION 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 authentication and authorization procedure initiated by the DN is transparent to the 5GSM layer of the UE.

Upon receipt of a PDU SESSION AUTHENTICATION COMPLETE message, the SMF shall stop timer T3590 and provides the EAP message received in the EAP message IE of the PDU SESSION AUTHENTICATION COMPLETE message to the DN or handles it locally.

\*\*\*\*\* Next change \*\*\*\*\*

#### 6.6.2.3 Remote UE report procedure accepted by the network

Upon receipt of the REMOTE UE REPORT message, the SMF shall send a REMOTE UE REPORT RESPONSE message to the UE. The SMF shall include the PTI from the REMOTE UE REPORT message.

The SMF shall set the EAP message IE to an EAP-success message or an EAP-failure message to be sent to the 5G ProSe layer-3 remote UE if the EAP-success message or the EAP-failure message is received from the DN.

Upon receipt of the REMOTE UE REPORT RESPONSE message, the UE shall stop timer T3586 and enter the state PROCEDURE TRANSACTION INACTIVE.

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.4.1 Message definition

The PDU SESSION AUTHENTICATION COMMAND message is sent by the SMF to the UE for authentication of the UE establishing the PDU session or of the UE participating in the PDU session. See table 8.3.4.1.1.

Message type: PDU SESSION AUTHENTICATION COMMAND

Significance: dual

Direction: network to UE

Table 8.3.4.1.1: PDU SESSION AUTHENTICATION COMMAND message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity9.6 | M | V | 1 |
|  | PDU SESSION AUTHENTICATION COMMAND message identity | Message type9.7 | M | V | 1 |
|  | EAP message | EAP message9.11.2.2 | M | LV-E | 6-1502 |
| 7B | Extended protocol configuration options | Extended protocol configuration options9.11.4.6 | O | TLV-E | 4-65538 |
|  |  |  |  |  |  |

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.4.3 Void

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.5.1 Message definition

The PDU SESSION AUTHENTICATION COMPLETE message is sent by the UE to the SMF in response to the PDU SESSION AUTHENTICATION COMMAND message and indicates acceptance of the PDU SESSION AUTHENTICATION COMMAND message. See table 8.3.5.1.1.

Message type: PDU SESSION AUTHENTICATION COMPLETE

Significance: dual

Direction: UE to network

Table 8.3.5.1.1: PDU SESSION AUTHENTICATION COMPLETE message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity9.6 | M | V | 1 |
|  | PDU SESSION AUTHENTICATION COMPLETE message identity | Message type9.7 | M | V | 1 |
|  | EAP message | EAP message9.11.2.2 | M | LV-E | 6-1502 |
| 7B | Extended protocol configuration options | Extended protocol configuration options9.11.4.6 | O | TLV-E | 4-65538 |
|  |  |  |  |  |  |

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.5.3 Void

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.20.1 Message definition

The REMOTE UE REPORT RESPONSE message is sent by the network to the UE to acknowledge receipt of a remote UE report message. See table 8.3.20.1.

Message type: REMOTE UE REPORT RESPONSE

Significance: dual

Direction: network to UE

Table 8.3.20.1: REMOTE UE REPORT RESPONSE message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity9.6 | M | V | 1 |
|  | Remote UE report response message identity | Message type9.7 | M | V | 1 |
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\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.20.2 Void

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.20.3 Void

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.3.20.4 Void

\*\*\*\*\* Next change \*\*\*\*\*

#### 9.11.4.35 Void

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\*\*\*\*\* End of changes \*\*\*\*\*