**3GPP TSG-CT1 Meeting #125-e *C1-204908***

**Online, , 20th Aug 2020 - 28th Aug 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **2500** | **rev** | **-** | **Current version:** | **16.5.1** |  |
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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:***  | Network slice-specific EAP result in case of no response by AAA-S |
|  |  |
| ***Source to WG:*** | LG Electronics  |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** |  eNS |  | ***Date:*** | 2020-08-13 |
|  |  |  |  |  |
| ***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)* |
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| ***Reason for change:*** | In the TS24.501 specification, the EAP-success/failure in the network slice-specific EAP result is provided only by the AAA-S via NSSAAF.There is no EAP-failure provided by NSSAAF due to "no response" in current specification. (For example. HTTP code set “504 gateway timeout”). Also, by examining everal specifications below, it is unclear whether NSSAAF generates EAP-failure in case of “no response” and whether NSSAAF forwards EAP-failure to AMF.But anyway, we need a way for the UE to know whether the NSSAA procedure is completed or not, in case of “no response”. There are two ways to indicated it.1. NSSAAF generates EAP-failure and forwards it to AMF.
2. When AMF receives HTTP code set “504 gateway timeout” without EAP-failiure, the AMF provides an indicator whether NSSAA procedure is completed as failed to UE.

We propose option2 to solve this problem.The TS29.561 section 16.1.2,The NSS-AAA server performs authentication and authorization for the user and requested network slice information. When the NSSAAF receives an Access-Accept message from the NSS-AAA server or AAA-P, it shall complete the network slice specific authentication procedure. If Access-Reject or no response is received, the NSSAAF shall reject the network slice specific authentication procedure with a suitable cause code.TS24.501 SpecificationNOTE 2: If the AMF receives the HTTP code set to "4xx" or "5xx" as specified in 3GPP TS 29.500 [20AA] or the AMF detects that the NSSAAF failure as specified in 3GPP TS 29.526 [21A] during the NSSAA procedure for an S-NSSAI, then the AMF considers the NSSAA procedure has failed for this S-NSSAI.TS29.526 Specification section 5.2.2. Authenticate In above steps, if the AAA-S is involved in the slice-specific authentication and authorization procedure while there is no expected response from the AAA-S in the case of time out, the NSSAAF shall return HTTP status code "504 Gateway Timeout", with the message body containing a ProblemDetails structure with the "cause" attribute set to "TIMED\_OUT\_REQUEST".RFC3748 section 2. EAP The authenticator MUST NOT send a Success or Failure packet when retransmitting or when it fails to get a response from the peer. |
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| ***Summary of change:*** | * New NSSAA Failure indicator IE is added in NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message.
* The AMF shall set the NSSAA Failure indicator of the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message when the AMF receives the HTTP code set "5xx" as specified in 3GPP TS 29.500 by the NSSAAF.
* New section 5.4.7.3.2 is added and some of procedure text is moved to new section.
* Because there is abbreviation for NSSAAF in TS24.501, Network Slice Specific Authentication and Authorization Function (NSSAAF) is changed to NSSAAF.
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| ***Consequences if not approved:*** | It is unclear a way for the UE to know whether the NSSAA procedure is completed or not, in case of “no response”. |
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| ***Clauses affected:*** | 5.4.7.3.1, 5.4.7.3.X(new), 8.2.33.1, 9.11.2.X(new) |
|  |  |
|  | **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 \*\*\*\*\*

##### 5.4.7.3.1 Network slice-specific EAP result message transport procedure initiation

In order to initiate the network slice-specific EAP result message transport procedure, the AMF shall create a NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message.

The AMF shall set the EAP message IE of the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message to the EAP-success or EAP-failure message provided by the AAA-S via the NSSAAF.

The AMF shall set the NSSAA Failure indicator of the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message when the AMF receives the HTTP code set "5xx" as specified in 3GPP TS 29.500 by the NSSAAF.The AMF shall set the S-NSSAI IE of the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message to the HPLMN S-NSSAI to which the EAP-success or EAP-failure message is related.

The AMF shall send the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message. The AMF shall retain the authentication result for the UE and the HPLMN S-NSSAI while the UE is registered to the PLMN (see subclause 5.15.10 in 3GPP TS 23.501 [8]).

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

##### 5.4.7.3.X (new) Network slice-specific EAP result message transport procedure accepted by the UE

Upon reception of a NSSAA Failure indicator of the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message, the UE considers network slice-specifc EAP result as failure.

 and

c) the NSSAA Failure indicator

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

#### 8.2.33.1 Message definition

The NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message is sent by the AMF to the UE for indicating the result of the network slice-specific authentication and authorization procedure. See table 8.2.33.1.1.

Message type: NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT

Significance: dual

Direction: network to UE

Table 8.2.33.1.1: NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | Security header type | Security header type9.3 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message identity | Message type9.7 | M | V | 1 |
|  | S-NSSAI | S-NSSAI9.11.2.8 | M | LV | 2-5 |
|  | EAP message | EAP message9.11.2.2 | O | LV-E | 6-1502 |
| XX | NSSAA Failure indicator | NSSAA Failure indicator9.11.2.X | O | TV | 1 |

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

#### 9.11.2.X (new) NSSAA Failure indicator

The purpose of the NSSAA Failure indication information element is to indicate that the NSSAA procedure is failed to to no response from AAA-S.

The NSSAA Failure indication information element is coded as shown in figure 9.11.2.10.1 and table 9.11.2.10.1.

The NSSAA Failure indication is a type 1 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| NSSAA Failure indication IEI | 0Spare | 0Spare | 0Spare | NFI | octet 1 |

Figure 9.11.2.X.1: NSSAA Failure indication

Table 9.11.2.X.1: NSSAA Failure indication

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| --- |
| NSSAA Failure indication (NFI) (octet 1) |
|  |
| Bit |
| 1 |  |
| 0 | reserved |
| 1 | NSSAA Failed due to no response from AAA-S |
|  |  |
| Bits 2, 3 and 4 are spare and shall be coded as zero, |

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