**3GPP TSG-CT WG1 Meeting #130-eC1-21wxyz**

**Electronic meeting, 20-28 May 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **CR#** | **rev** | **-** | **Current version:** | **17.2.1** |  |
|  |
| *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)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Encoding of secondary API-based DN-AA |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ID\_UAS |  | ***Date:*** | 2021-03-28 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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)* |
|  |  |
| ***Reason for change:*** | SA2 has discussed in meeting #144E the need for having a UAS specific authentication/authorization (AA) by a DN is needed at PDU session establishment. It was concluded that although the procedure is described in TS 23.256 it should be specified as a generic secondary API-based DN-AASee TS 23.256 which contains the following EN in clause 5.2.3 UUAA At PDN Connection/PDU Session Establishment (UUAA-SM)." Editor’s Note: The naming for the procedures and IEs, where needed, will be updated to make them generic (i.e. not specific to ID\_UAS)."**Observation 1:** During the PDU session establishment the UAV can provide a CAA-Level UAV ID, optionally a USS address and a UUAA Aviation Payload. Now it is to be noted that, while the 3GPP network needs to understand the CAA-Level UAV ID and the USS address (e.g. to initiate UUAA-SM procedure or for USS discovery), the UUAA Aviation Payload is transparently sent to the USS.**Proposal 1:** It is proposed to use the generic term "Service Level Device Identity" for CAA-Level UAV ID, "Authentication Server Address" for USS address. It is also proposed to encode the "UUAA Aviation Payload" in a transparent container sent by the UE.**Observation 2:** The response from the USS contains the UUAA result, optionally a new CAA-Level UAV ID and optionally an UUAA Authorization Payload. While 3GPP network needs to know the UUAA result and the new CAA-Level UAV ID, the UUAA Authorization Payload is transparently sent to the UAV.**Proposal 2:** It is proposed to use "Service Level Device Identity" for CAA-Level UAV ID, "Authorization Data" for UUAA Authorization Payload and clarify that the "Authorization Data" are transparently sent to the UAV, similarly to the UUAA Aviation Payload.Similar observations hold for AA in the attach procedure for EPS.The very same information is exchanged in the case of UUAA-MM, and hence it is proposed that a common element is defined. |
|  |  |
| ***Summary of change:*** | Introduce a common IE for API-based DN AA |
|  |  |
| ***Consequences if not approved:*** | Transfer of the required information among the UE, the network and the DN AA server is not supported  |
|  |  |
| ***Clauses affected:*** | 8.2.6.1, 9.11.2.x(new), 9.11.2.x1(new), 9.11.2.y(new), 9.11.2.z(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 ...  |
|  |  |
| ***Other comments:*** | The CR is linked to the SA2 pCR S2-210abc1 Generic IE names for UUAA-SM |
|  |  |
| ***This CR's revision history:*** |  |

### 8.2.6 Registration request

#### 8.2.6.1 Message definition

The REGISTRATION REQUEST message is sent by the UE to the AMF. See table 8.2.6.1.1.

Message type: REGISTRATION REQUEST

Significance: dual

Direction: UE to network

Table 8.2.6.1.1: REGISTRATION REQUEST 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 |
|  | Registration request message identity | Message type9.7 | M | V | 1 |
|  | 5GS registration type | 5GS registration type9.11.3.7 | M | V | 1/2 |
|  | ngKSI | NAS key set identifier9.11.3.32 | M | V | 1/2 |
|  | 5GS mobile identity | 5GS mobile identity9.11.3.4 | M | LV-E | 6-n |
| C- | Non-current native NAS key set identifier | NAS key set identifier9.11.3.32 | O | TV | 1 |
| 10 | 5GMM capability | 5GMM capability9.11.3.1 | O | TLV | 3-15 |
| 2E | UE security capability | UE security capability9.11.3.54 | O | TLV | 4-10 |
| 2F | Requested NSSAI | NSSAI9.11.3.37 | O | TLV | 4-74 |
| 52 | Last visited registered TAI | 5GS tracking area identity9.11.3.8 | O | TV | 7 |
| 17 | S1 UE network capability | S1 UE network capability9.11.3.48 | O | TLV | 4-15 |
| 40 | Uplink data status | Uplink data status9.11.3.57 | O | TLV | 4-34 |
| 50 | PDU session status | PDU session status9.11.3.44 | O | TLV | 4-34 |
| B- | MICO indication | MICO indication9.11.3.31 | O | TV | 1 |
| 2B | UE status | UE status9.11.3.56 | O | TLV | 3 |
| 77 | Additional GUTI | 5GS mobile identity9.11.3.4 | O | TLV-E | 14 |
| 25 | Allowed PDU session status | Allowed PDU session status9.11.3.13 | O | TLV | 4-34 |
| 18 | UE's usage setting | UE's usage setting9.11.3.55 | O | TLV | 3 |
| 51 | Requested DRX parameters | 5GS DRX parameters9.11.3.2A | O | TLV | 3 |
| 70 | EPS NAS message container | EPS NAS message container9.11.3.24 | O | TLV-E | 4-n |
| 74 | LADN indication | LADN indication9.11.3.29 | O | TLV-E | 3-811 |
| 8- | Payload container type | Payload container type9.11.3.40 | O | TV | 1 |
| 7B | Payload container | Payload container9.11.3.39 | O | TLV-E | 4-65538 |
| 9- | Network slicing indication | Network slicing indication9.11.3.36 | O | TV | 1 |
| 53 | 5GS update type | 5GS update type9.11.3.9A | O | TLV | 3 |
| 41 | Mobile station classmark 2 | Mobile station classmark 29.11.3.31C | O | TLV | 5 |
| 42 | Supported codecs | Supported codec list9.11.3.51A | O | TLV | 5-n |
| 71 | NAS message container | NAS message container9.11.3.33 | O | TLV-E | 4-n |
| 60 | EPS bearer context status | EPS bearer context status9.11.3.23A | O | TLV | 4 |
| 6E | Requested extended DRX parameters | Extended DRX parameters9.11.3.26A | O | TLV | 3 |
| 6A | T3324 value | GPRS timer 39.11.2.5 | O | TLV | 3 |
| 67 | UE radio capability ID | UE radio capability ID9.11.3.68 | O | TLV | 3-n |
| 35 | Requested mapped NSSAI | Mapped NSSAI9.11.3.31B | O | TLV | 3-42 |
| 48 | Additional information requested | Additional information requested9.11.3.12A | O | TLV | 3 |
| 1A | Requested WUS assistance information | WUS assistance information9.11.3.71 | O | TLV | 3-n |
| A- | N5GC indication | N5GC indication9.11.3.72 | O | T | 1 |
| 30 | Requested NB-N1 mode DRX parameters | NB-N1 mode DRX parameters9.11.3.73 | O | TLV | 3 |
| xx | DN authentication-authorization container | DN authentication-authorization container 9.11.2.x | O | TLV | 3-n |

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

#### 9.11.2.x DN authentication-authorization container

The purpose of the DN authentication-authorization container information element is to transfer DN-specific information between the UE and the network.

The DN authentication-authorization container information element is coded as shown in figure 9.11.2.x.1, figure 9.11.2.x.2, figure 9.11.2.x.3 and table 9.11.2.x.1.

The DN authentication-authorization container is a type 6 information element with a minimum length of 3 octets and a maximum length of 65538 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| DN authentication-authorization container IEI | octet 1 |
| Length of DN authentication-authorization container contents | octet 2 |
|  | octet 3 |
|  | octet 4 |
| DN authentication-authorization container contents |  |
|  | octet n\* |

Figure 9.11.2.x.1: DN authentication-authorization container information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of optional IEs | octet 4 |
| Optional IE 1 | octet 5\*octet x2\* |
| Optional IE 2 | octet x2+1\*octet x3\* |
| …… | … |
| Optional IE i | octet xi +1\*octet n\* |

Figure 9.11.2.x.2: DN authentication-authorization container contents

Editor's note: (ID\_UAS, CR#xx). It is FFS whether CAA-level UAV ID needs to be always present.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Type of optional IE | octet xi +1 |
| Length of optional IE | octet xi +2 |
| Value of optional IE | octet xi +3octet n |

Figure 9.11.2.x.3: Optional IE

Table 9.11.3.39.1: DN authentication-authorization container information element

|  |
| --- |
| DN authentication-authorization container contents (octet 4 to octet n); max value of 65535 octets |
| The coding of DN authentication-authorization container contents is dependent on the particular application. |
| The number of optional IEs field represents the total number of optional IEs in the DN authentication-authorization container contents. The error handlings for optional IEs specified in subclauses 7.6.1, 7.6.3 and 7.7.1 shall apply to the optional IEs included in the DN authentication-authorization container contents. |
| Optional IEsType of optional IE (octet xi +1)This field contains the IEI of the optional IE.Length of optional IE (octet xi+2)This field indicates binary coded length of the value of the optional IE entry.Value of optional IE (octet xi+3 to octet n)This field contains the value of the optional IE entry with the value part of the referred information element based on following optional IE reference. |
| IEI  | Optional IE name | Optional IE reference |
| Pp | Service-level device ID | Service-level device ID (see subclause 9.11.2.y) |
| Qq | Authentication server address | Authentication server address (see subclause 9.11.2.z) |
| SS | Authorization data transparent payload | Authorization data transparent payload (see subclause 9.11.2.s) |

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

#### 9.11.2.x1 DN authentication response

The purpose of the DN authentication response information element is to provide information regarding the DN authentication request, e.g. to indicate that the authentication request to the DN authentication server was successful.

The DN authentication response information element is coded as shown in figure 9.11.2.x1.

The DN authentication success is a type 1 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| DN authentication response IEI | 0Spare | 0Spare | 0Spare | DNAR | octet 1 |

Figure 9.11.2.x1: DN authentication response information element

Table 9.11.2.x1: DN authentication response information element

|  |
| --- |
| DN authentication result bit (DNAR) (octet 1, bit 1) |
| Bit |
| 1 |  |
| 0 | DN authentication was successful |
| 1 | DN authentication was not successful |
|  |
| Bits 2 to 4 are spare and shall be coded as zero. |

Editor's note: (ID\_UAS, CR#xx). It is FFS whether DN authentication response needs to be a separate IE or part of the container.

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

#### 9.11.2.y Service-level device ID

The purpose of the service-level device ID information element is to carry the necessary identity for authentication and authorization by the external DN.

The service-level device ID information element is coded as shown in figure 9.11.2.y.1 and table 9.11.2.y.1.

The service-level device ID is a type 4 information element with minimal length of 3 octets and maximum length of 255 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Service-level device ID IEI | octet 1 |
| Service-level device ID length | octet 2 |
| Service-level device ID | octets 3\*-y\* |

Figure 9.11.2.y.1: Service-level device ID information element

Table 9.11.2.y.1: Service-level device ID information element

|  |
| --- |
| Service-level device ID (octet 3 to octet y)A DN-specific service-level device ID encoded as UTF-8 string. |

Editor's note: (ID\_UAS, CR#xx). It is FFS what formats of CAA-level UAV ID need to be supported, and if it is to be defined in 3GPP TS 23.003 [4] under the responsibility of CT4.

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

#### 9.11.2.z Authentication server address

The purpose of the authentication server address information element is to carry the address of the DN authentication server.

The authentication server address information element is coded as shown in figure 9.11.2.z.1 and table 9.11.2.z.1.

The authentication server address is a type 4 information element with minimal length of 3 octets and maximum length of 255 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Authentication server address IEI | octet 1 |
| Authentication server address length | octet 2 |
| Authentication server address | octets 3\*-z\* |

Figure 9.11.2.z.1: Authentication server address information element

Table 9.11.2.z.1: Authentication server address information element

|  |
| --- |
| Authentication server address (octet 3 to octet z)A DN-specific authentication server address encoded as UTF-8 string. |

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

#### 9.11.2.s Authentication data transparent payload

The purpose of the authentication data transparent payload information element is to carry the address of the DN authentication server.

The authentication data transparent payload information element is coded as shown in figure 9.11.2.s.1 and table 9.11.2.s.1.

The authentication data transparent payload is a type 4 information element with minimal length of 3 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Authentication data transparent payload IEI | octet 1 |
| Authentication data transparent payload length | octet 2 |
| Authentication data transparent payload | octets 3\*-s\* |

Figure 9.11.2.s.1: Authentication data transparent payload information element

Table 9.11.2.s.1: Authentication data transparent payload information element

|  |
| --- |
| Authentication data transparent payload (octet 3 to octet s)A DN-specific authentication payload transparently transported and which is provided to the upper layers. |

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