**3GPP TSG-CT WG1 Meeting #130-eC1-213102-draft-rev01**

**Electronic meeting, 20-28 May 2021 rev of C1-213102**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **3103** | **rev** | **2** | **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:*** | OPPO, Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung, Interdigital |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ID\_UAS |  | ***Date:*** | 2021-05-13 |
|  |  |  |  |  |
| ***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-AA should be specified. See 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 ID" for CAA-Level UAV ID, "Service-level-AA 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 ID" for CAA-Level UAV ID, "Service-level-AA payload" 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, 8.2.6.XX(new), 8.2.7.1, 8.2.7.YY(new), 9.11.2.x(new),, 9.11.2.y(new), 9.11.2.z(new), 9.11.2.s(new), 9.11.2.w(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:*** | This CR has a related SA2 pCR to TS 23.256 in S2-2104110 "Generic IE names for UUAA-SM". As TS 23.256 is not under MCC control, the related SA2 pCR is not indicated in above "related CRs" section.CR rev 0 (C1-212081) and CR rev 1 (C1-212407 but with wrong rev number of CR) has the title " UE configured for high priority access in selected PLMN". CR rev2 has changed the title to " Encoding of secondary API-based DN-AA" |
|  |  |
| ***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 | Service-level-AA container | Service-level-AA container9.11.2.x | O | TLV-E | 3-n |

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

#### 8.2.6.XX Service-level-AA container

The UE shall use Service-level-AA container information element to include:

- Service-level device ID;

- AA server address; and

- Service-level-AA payload,

when registering for UAV operation.

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

#### 8.2.7.1 Message definition

The REGISTRATION ACCEPT message is sent by the AMF to the UE. See table 8.2.7.1.1.

Message type: REGISTRATION ACCEPT

Significance: dual

Direction: network to UE

Table 8.2.7.1.1: REGISTRATION ACCEPT 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 accept message identity | Message type9.7 | M | V | 1 |
|  | 5GS registration result | 5GS registration result9.11.3.6 | M | LV | 2 |
| 77 | 5G-GUTI | 5GS mobile identity9.11.3.4 | O | TLV-E | 14 |
| 4A | Equivalent PLMNs | PLMN list9.11.3.45 | O | TLV | 5-47 |
| 54 | TAI list | 5GS tracking area identity list9.11.3.9 | O | TLV | 9-114 |
| 15 | Allowed NSSAI | NSSAI9.11.3.37 | O | TLV | 4-74 |
| 11 | Rejected NSSAI | Rejected NSSAI9.11.3.46 | O | TLV | 4-42 |
| 31 | Configured NSSAI | NSSAI9.11.3.37 | O | TLV | 4-146 |
| 21 | 5GS network feature support | 5GS network feature support9.11.3.5 | O | TLV | 3-5 |
| 50 | PDU session status | PDU session status9.11.3.44 | O | TLV | 4-34 |
| 26 | PDU session reactivation result | PDU session reactivation result9.11.3.42 | O | TLV | 4-34 |
| 72 | PDU session reactivation result error cause | PDU session reactivation result error cause9.11.3.43 | O | TLV-E | 5-515 |
| 79 | LADN information | LADN information9.11.3.30 | O | TLV-E | 12-1715 |
| B- | MICO indication | MICO indication9.11.3.31 | O | TV | 1 |
| 9- | Network slicing indication | Network slicing indication9.11.3.36 | O | TV | 1 |
| 27 | Service area list | Service area list9.11.3.49 | O | TLV | 6-114 |
| 5E | T3512 value | GPRS timer 39.11.2.5 | O | TLV | 3 |
| 5D | Non-3GPP de-registration timer value | GPRS timer 29.11.2.4 | O | TLV | 3 |
| 16 | T3502 value | GPRS timer 29.11.2.4 | O | TLV | 3 |
| 34 | Emergency number list | Emergency number list9.11.3.23 | O | TLV | 5-50 |
| 7A | Extended emergency number list | Extended emergency number list9.11.3.26 | O | TLV-E | 7-65538 |
| 73 | SOR transparent container | SOR transparent container9.11.3.51 | O | TLV-E | 20-n |
| 78 | EAP message | EAP message9.11.2.2 | O | TLV-E | 7-1503 |
| A- | NSSAI inclusion mode | NSSAI inclusion mode9.11.3.37A | O | TV | 1 |
| 76 | Operator-defined access category definitions | Operator-defined access category definitions9.11.3.38 | O | TLV-E | 3-8323 |
| 51 | Negotiated DRX parameters | 5GS DRX parameters9.11.3.2A | O | TLV | 3 |
| D- | Non-3GPP NW policies | Non-3GPP NW provided policies9.11.3.36A | O | TV | 1 |
| 60 | EPS bearer context status | EPS bearer context status9.11.3.23A | O | TLV | 4 |
| 6E | Negotiated extended DRX parameters | Extended DRX parameters9.11.3.26A | O | TLV | 3 |
| 6C | T3447 value | GPRS timer 39.11.2.5 | O | TLV | 3 |
| 6B | T3448 value | GPRS timer 29.11.2.4 | 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 |
| E- | UE radio capability ID deletion indication | UE radio capability ID deletion indication9.11.3.69 | O | TV | 1 |
| 39 | Pending NSSAI | NSSAI9.11.3.37 | O | TLV | 4-146 |
| 74 | Ciphering key data | Ciphering key data9.11.3.18C | O | TLV-E | 34-n |
| 75 | CAG information list | CAG information list9.11.3.18A | O | TLV-E | 3-n |
| 1B | Truncated 5G-S-TMSI configuration | Truncated 5G-S-TMSI configuration9.11.3.70 | O | TLV | 3 |
| 1C | Negotiated WUS assistance information | WUS assistance information9.11.3.71 | O | TLV | 3-n |
| 29 | Negotiated NB-N1 mode DRX parameters | NB-N1 mode DRX parameters9.11.3.73 | O | TLV | 3 |
| 68 | Extended rejected NSSAI | Extended rejected NSSAI9.11.3.75 | O | TLV | 4-74 |
| YY | Service-level-AA response | Service-level-AA response | O | TLV-E | 1 |

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

#### 8.2.7.YY Service-level-AA response

The network shall use Service-level-AA response information element to include the server authentication and authorization result.

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

#### 9.11.2.x Service-level-AA container

The purpose of the Service-level-AA container information element is to transfer upper layer information for authentication and authorization between the UE and the network.

The Service-level-AA 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 Service-level-AA 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 |  |
| Service-level-AA container IEI | octet 1 |
| Length of Service-level-AA container contents | octet 2 |
|  | octet 3 |
|  | octet 4 |
| Service-level-AA container contents |  |
|  | octet n\* |

Figure 9.11.2.x.1: Service-level-AA container information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of Service-level-AA parameters | octet 4 |
|  Service-level-AA parameter 1 | octet 5\*octet x2\* |
|  Service-level-AA parameter 2 | octet x2+1\*octet x3\* |
| …… | … |
|  Service-level-AA parameter i | octet xi +1\*octet n\* |

Figure 9.11.2.x.2: Service-level-AA container contents

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Type of Service-level-AA parameter | octet xi +1 |
| Length of Service-level-AA parameter | octet xi +2 |
| Value of Service-level-AA parameter | octet xi +3\*octet n\* |

Figure 9.11.2.x.3: Service-level-AA parameter

Table 9.11.2.x.1: Service-level-AA container information element

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

\*\*\*\*\* 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 Service-level device ID encoded as UTF-8 string. |

Editor's note: (ID\_UAS, CR#3103). It is FFS what formats of Service-level device 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 Service-level-AA server address

The purpose of the Service-level-AA server address information element is to carry the address of the service level authentication and authorization server.

The Service-level-AA server address information element is coded as shown in figure 9.11.2.z.1 and figure 9.11.2.z.2 and table 9.11.2.z.1.

The Service-level-AA 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 |  |
| Service-level-AA server address IEI | octet 1 |
| Service-level-AA server address type(= IP address type) | octet 2 |
| Service-level-AA server address | octets 3\*-z\* |

Figure 9.11.2.z.1: Service-level-AA server address information element (IP adress type)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Service-level-AA server address IEI | octet 1 |
| Service-level-AA server address type(= FQDN) | octet 2 |
| Service-level-AA server address length | octet 3 |
| Service-level-AA server address | octets 4\*-z\* |

Figure 9.11.2.z.2: Service-level-AA server address information element (FQDN)

Table 9.11.2.z.1: Service-level-AA server address information element

|  |
| --- |
|  |

|  |
| --- |
| Service-level-AA server address type (octet 2):Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | IPv4 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | IPv6 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | IPv4v6 |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | FQDN |
| All other values are spare. |
|  |
| If the Service-level-AA server address type indicates IPv4, then the Service-level-AA server address field contains an IPv4 address in octet 3 to octet 6. |
|  |
| If the Service-level-AA server address type indicates IPv6, then the Service-level-AA server address field contains an IPv6 address in octet 3 to octet 18. |
|  |
| If the Service-level-AA server address type indicates IPv4v6, then the Service-level-AA server address field contains two IP addresses. The first IP address is an IPv4 address in octet 3 to octet 6. The second IP address is an IPv6 address in octet 7 to octet 22. |
|  |
| If the Service-level-AA server address type indicates FQDN, octet 3 indicates the length of the Service-level-AA server address. Octet 3 to octet z is encoded as defined in subclause 28.3.2.2.2 in 3GPP TS 23.003 [4]. |
|  |

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

#### 9.11.2.s Service-level-AA payload

The purpose of the Service-level-AA payload information element is to carry the upper layer payload for authentication and authorization between the UE and the Service-level-AA server.

The Service-level-AA payload information element is coded as shown in figure 9.11.2.s.1 and table 9.11.2.s.1.

The Service-level-AA payload is a type 4 information element with minimal length of 3 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Service-level-AA payload IEI | octet 1 |
| Service-level-AA payload length | octet 2 |
| Service-level-AA payload | octets 3\*-s\* |

Figure 9.11.2.s.1: Service-level-AA payload information element

Table 9.11.2.s.1: Service-level-AA payload information element

|  |
| --- |
| Service-level-AA payload (octet 3 to octet s)A payload for authentication and authorization transparently transported and which is provided from/to the upper layers. |

Editor's note: (ID\_UAS, CR#3103). For forward compatibility to accommodate future vertical services, differentiation for different types of payload is needed. How to achieve this differentiation is FFS.

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

#### 9.11.2.w Service-level-AA response

The purpose of the Service-level-AA response information element is to provide information regarding the service level authentication and authorization request, e.g. to indicate that the authentication and authorization request to the service level authentication server was successful.

The Service-level-AA response information element is coded as shown in figure 9.11.2.w.1 and table 9.11.2.w.1.

The Service-level-AA response is a type 1 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Service-level-AA response IEI | 0Spare | 0Spare | 0Spare | SLAR | octet 1 |

Figure 9.11.2.w.1: Service-level-AA response information element

Table 9.11.2.w.1: Service-level-AA response information element

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

\*\*\*\*\* End of change \*\*\*\*\*