**3GPP TSG-CT WG1 Meeting #137-eC1-224807**

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.538** | **CR** | **0006** | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *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 |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Correction of Layer-2 ID | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMARCH | | | | |  | ***Date:*** | | | 2022-08-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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 can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The connection mode between the constrained UE and the MSGin5G Gateway UE may be a L2 connection or L3 connection. Thus when the constrained UE registers to the MSGin5G Gateway UE, the MSGin5G Gateway UE can stores a L2-address of the constrained UE or a L3-address(IP address+port). As required from stage 2(as specified in clause 8.11.2 of TS 23.554):  “*2) Upon receiving the request from the Application Client-2, the MSGin5G Client-1 authorizes the Application Client-2 on UE-2 to use gateway functionality and MSGin5G Client-1 stores the mapping between Application ID and Layer-2 ID of the UE-2.*”  The mapping between the Application ID and Layer-2 ID is used for MSGin5G Message delivery to the constrained devices. However, the layer-2 ID is an identifier of the transport layer which can be retrieved from the transport layer. Thus it is unnecessary to include it in the L3 message or CoAP request. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Change “Layer-2 ID” to “transport id”.  2. Remove the IE of Layer-2 ID from the L3 message or CoAP request exchanged between the constrained UE and the MSGin5G Gateway UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Unnecessary IE is included in the L3 message or CoAP request exchanged between the constrained UE and the MSGin5G Gateway UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.2.1.1, 6.3.2.1.2, 6.3.2.2.1, A.2.1.7, A.2.2.14, A.2.2.17, A3.1.7, A.3.2.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

##### 6.3.2.1.1 Constrained device registration to use MSGin5G Gateway UE

Upon reception of registration request from the application client on the Constrained UE, the MSGin5G Gateway UE decides whether to accept the registration request based on local condition.

If the registration is accepted by the MSGin5G Gateway UE, the MSGin5G Client on the MSGin5G Gateway UE:

a) stores Application ID included in the registration request from the Constrained UE and the mapping between the transport identifier and the Application ID;

NOTE 1: Based on the connection mode, e.g. L2 connection or L3 connection, the MSGin5G Gateway UE can allocate a specified MAC address or UDP port for exchanging information between the MSGin5G Gateway UE and the Constrained UE. The transport mechanism is based on the legacy transport protocol.

NOTE 2: The MSGin5G Gateway UE retrieves the transport identifier from the transport layer. The transport identifier can be a Layer2 ID, e.g. MAC address, or a Layer3 ID, e.g. IP address with a specific UDP port.

b) allocates a Registration ID for the Constrained UE; and

c) constructs the registration response and sends it to the application client on the Constrained UE. The registration response shall include:

1) the Registration Result indicates the registration is accepted by the MSGin5G Gateway UE; and

2) the Registration ID allocated by the MSGin5G Gateway UE.

If the registration is not accepted by the MSGin5G Gateway UE, the MSGin5G Client on the MSGin5G Gateway UE constructs the registration response and sends it to the application client on the Constrained UE. The registration response shall include:

a) the Registration Result indicating the registration is not accepted by the MSGin5G Gateway UE; and

b) the Failure Reason indicating an appropriate reason why the registration request is rejected by the MSGin5G Gateway UE.

\* \* \*Next Change \* \* \* \*

##### 6.3.2.1.2 Constrained device de-registration to use MSGin5G Gateway UE

Upon reception of de-registration request from the application client on the Constrained UE, the MSGin5G Gateway UE:

a) removes the mapping between Application ID and transport identifier of the UE-2 based on the Registration ID included in the de-registration request; and

b) constructs the de-registration response including:

1) the De-registration Result indicating whether the de-registration is accepted or not;

2) the Registration ID included in the de-registration request, if the de-registration is accepted by the MSGin5G Gateway UE; and

3) the Failure Reason indicating an appropriate cause indicating why the de-registration request is rejected by the MSGin5G Gateway UE, if the de-registration is not accepted by the MSGin5G Gateway UE.

NOTE: Based on the connection mode, e.g. L2 connection or L3 connection, the MSGin5G Gateway UE may allocate a specified MAC address or UDP port for exchanging information between the MSGin5G Gateway UE and the Constrained UE. The transport mechanism is based on the legacy transport protocol.

\* \* \*Next Change \* \* \* \*

##### 6.3.2.2.1 Constrained device registration to use MSGin5G Gateway UE

In order to register Constrained UE to the MSGin5G Gateway UE, the Application Client on the Constrained UE sends a registration request to the MSGin5G Client on the MSGin5G Gateway UE. The registration request shall include the "Application ID" to indicate the Application Client on the Constrained UE initiating registration.

NOTE: If a specified MAC address or UDP port is configured for exchanging information between the MSGin5G Gateway UE and the Constrained UE, the Constrained UE shall send the registration request to the specified MAC address or UDP port.

\* \* \*Next Change \* \* \* \*

### A.2.1.7 Registration Request

The Registration Request is sent by the Application Client of the Constrained UE to the MSGin5G Client of the MSGin5G Gateway UE to initiate registration. See table A.2.1.7.

Message type: REGISTRATION REQUEST

Significance: dual

Direction: the Application Client of the Constrained UE to the MSGin5G Client of the MSGin5G Gateway UE

Table A.2.1.7: REGISTRATION REQUEST content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message Type  A.2.2.1 | M | V | 1 |
|  | Application ID | Application ID  A.2.2.3 | M | V | 1 |
|  | Credential information | Credential information  A.2.2.15 | M | LV | 2-XX |

\* \* \*Next Change \* \* \* \*

### A.2.2.14 Void







\* \* \*Next Change \* \* \* \*

### A.2.2.17 MSGin5G cause

The purpose of the MSGin5G cause information element is to indicate the cause used for MSGin5G procedures.

The MSGin5G cause is a type 3 information element with a length of 2 octets.

The MSGin5G cause information element is coded as shown in figure A.2.2.17 and table A.2.2.17.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MSGin5G cause IEI | | | | | | | | octet 1 |
| MSGin5G cause value | | | | | | | | octet 2 |

Figure A.2.2.17: MSGin5G cause information element

Table A.2.2.17: MSGin5G cause information element

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MSGin5G cause (octet 2) | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | |
| Bits | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 7 | | 6 | | 5 | | 4 | | 3 | | | 2 | | | 1 | | |  | | |  | | |
| 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | | 1 | | |  | | | Access via a Gateway UE is not allowed | |
| 0 | 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 0 | | |  | | | Invalid credentials | | |
| 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 1 | | | 1 | | |  | | | Conflict of transport identifier for unicast communication is detected | |
| 0 | 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | | 0 | | |  | | | Connection is not available anymore | | |
| 0 | 0 | | 0 | | 0 | | 0 | | | 1 | | | 0 | | | 1 | | |  | | | Lack of resources for lower layer | |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 1 | | | 0 | | |  | | | Congestion situation |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 1 | | | 1 | | |  | | | Unknown device |
|  |  | |  | |  | |  | | |  | | |  | | |  | | |  | | |  | |
| 0 | 1 | | 1 | | 0 | | 1 | | | 1 | | | 1 | | | 1 | | |  | | | Protocol error, unspecified | |
|  |  | |  | |  | |  | | |  | | |  | | |  | | |  | | |  | |
| Any other value received by the UE shall be treated as 0110 1111, "protocol error, unspecified". | | | | | | | | | | | | | | | | | | | | | | | |

\* \* \*Next Change \* \* \* \*

### A.3.1.7 Registration Request

The registration request sent by the Application Client of the Constrained UE to the MSGin5G Client of the MSGin5G Gateway UE is based on the CoAP POST request as specified in IETF RFC 7252 [5]. The Application Client of the Constrained UE:

a) shall set the "T" field in the CoAP header to 0 to indicate acknowledge message required;

b) shall include the address of the MSGin5G Gateway UE in the Option header of the CoAP POST request and set the Option header to a corresponding value, e.g. if address of the MSGin5G Gateway UE is a URI, the Uri-Path Option is set to the value of such URI;

c) shall set the "Content-Format" element to "50" to indicate the format of the CoAP payload is "application/json"; and

d) shall include the following information elements in the CoAP payload encoded in JSON format:

1) the "MSGin5G service identifier" element to indicate that this CoAP POST request is used for MSGin5G service;

2) the "Message Type" element to indicate that the CoAP POST request is used for registration;

3) the "Application ID " element to indicate the application client initiating registration; and

4) the "Credential information" element to indicate the credential information of the Constrained UE.

\* \* \*Next Change \* \* \* \*

### A.3.2.7 Registration structure

The schema is based on JSON Schema Draft-07 [8]. For reducing the overhead of the message used in MSGin5G service, the properties are defined as shorten form and the relationships between the properties and elements used in clause A.3.1.7 are described in the description of the properties. The JSON schema of the CoAP POST request for the MSGin5G registration is defined below:

{

"$schema": "http://json-schema.org/draft-07/schema#",

"$id": "http://www.3gpp.org/MSGin5G/MSGin5G\_Registration\_request\_schema",

"title": "MSGin5G Registration Request",

"type": "object",

"properties": {

"msgIden": {

"type": "string",

"format": "uri",

"description": "Refer to Service identifier of MSGin5G service"

},

"msgType": {

"type": "string",

"enum": [

"REG"

],

"description": "Refer to the usage of this message. The value REG refers to MSGin5G Registration"

},

"appId": {

"type": "string",

"description": "Refer to Application ID"

},

"credential": {

"type": "string",

"description": "Refer to Credential Information"

}

},

"required": [

"msgId",

"msgType",

"l2ID",

"appID",

"credential"

]

}

The schema is based on JSON Schema Draft-07 [8]. For reducing the overhead of the message used in MSGin5G service, the properties are defined as shorten form and the relationships between the properties and elements used in clause A.3.1.8 are described in the description of the properties. The JSON schema of CoAP 2.01 (Created) response or CoAP 2.04 (Change) response for the MSGin5G registration is defined below:

{

"$schema": "http://json-schema.org/draft-07/schema#",

"$id": "http://www.3gpp.org/MSGin5G/MSGin5G\_Registration\_response\_schema",

"title": "MSGin5G Registration Response",

"type": "object",

"properties": {

"result": {

"type": "boolean",

"default": true,

"description": "Refer to Registration result. The value true refers to succcess"

},

"registration ID": {

"type": "string",

"description": "Refer to Regsitration ID"

},

"failure reason": {

"type": "string",

"description": "Refer to Failure Reason"

}

},

"required": [

"result"

]

}

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