**3GPP TSG-CT WG1 Meeting #146C1-240174 rev1**

**Online, 22– 26 January 2024**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **24.538** | **CR** | **0103** | **rev** | **-** | **Current version:** | **18.3.0** |  |
|  |
| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <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:***  | Update of Annex A based on updated architecture |
|  |  |
| ***Source to WG:*** | China Mobile |
| ***Source to TSG:*** | CT1 |
|  |  |
| ***Work item code:*** | 5GMARCH\_Ph2 |  | ***Date:*** | 2024-01-12 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-18 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Clause 6.4.2 specifies both the procedures in MSGin5G-5 reference and procedures using Relay UE. This clause is updated in previous versions of TS24.538, The example message format/protocol used by clause 6.4.2 is specified in Annex A but the related IEs and description in the Annex A are not updated accordingly with clause 6.4.2.This CR is proposed to update the Annex A based on the update of clause 6.4.2. |
|  |  |
| ***Summary of change:*** | Update of Annex A based on updated of clause 6.4.2. |
|  |  |
| ***Consequences if not approved:*** | The IEs in Annex A are not aligned with clause 6.4.2 |
|  |  |
| ***Clauses affected:*** | A.1, A.2, A.2.0(new), A.2.1.1, A.2.1.2, A.2.1.3, A.2.1.4, A.2.1.5, A.2.1.6, A.2.1.7, A.2.1.8, A.2.1.9, A.2.1.10, A.2.1.11, A.2.1.12, A.2.2.2, A.2.2.10, A.2.2.11 |
|  |  |
|  | **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:*** | Rev1: removed unchanged clauses and updated the reason for change. |

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

Annex A (Informative): Message formats/protocols used for Constrained UE and Application Client

# A.1 General

The following clauses provide guidance of message formats/protocols which may be used between MSGin5G Client residing in an MSGin5G UE and other UEs. The Annex A.2 provides guidance of message formats/protocols between MSGin5G Client residing in an MSGin5G UE and the Application Client residing in another UE. The AnnexA.3 provides guidance of message formats/protocols between MSGin5G Client residing in a Constrained UE which cannot connect to the 3GPP network directly for message exchange with MSGin5G Server and a MSGin5G Gateway Client on the MSGin5G Gateway UE.

# A.2 Based on standard L3 message

## A.2.0 General

The following clauses describe an example based on standard L3 message as specified in clause 11.2 of 3GPP TS 24.007 [15].

Each message definition in the clause includes a brief description of the message direction, the use, and the significance indicates whether the message is relevant only on the sender or receiver (local) or the message is relevant on both sender and receiver (dual).

NOTE: Message format defined in this clause can be used if the communication between the MSGin5G Client and the Application Client is based on PC5 / NR-PC5.

## A.2.1 Message contents and functions

### A.2.1.1 for sending a message to MSGin5G Client

For sending a message to MSGin5G Client, the Application Client may use the message content specified in Table A.2.1.1-1.

Message type: MESSAGE SENDING REQUEST

Significance: dual

Direction: the Application Client residing on another UE to the MSGin5G Client of the MSGin5G UE

Table A.2.1.1-1: message content for sending a message to MSGin5G Client

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Target address | Target address A.2.2.2 | M | LV | 6-n |
|  | Message ID | Message IDA.2.2.4 | M | V | 16 |
|  | Payload | PayloadA.2.2.5 | M | LV-E | 3-65537 |
| A | Application ID | Application IDA.2.2.3 | O | TV | 3 |
| B | Delivery status required | Delivery status requiredA.2.2.6 | O | TV | 1 |
| D | Target Type | Target TypeA.2.2.7 | O | TV | 1 |

If using the message content specified in table A.2.1.1-1, the Application Client may generate a message according to 6.4.2.3.1 and send the generated message to the MSGin5G Client.

### A.2.1.2 for sending a message delivery report to MSGin5G Client

For sending a message delivery status report to MSGin5G Client, the Application Client may use the message content specified in Table A.2.1.2-1.

Message type: DELIVERY REPORT SENDING REQUEST

Significance: dual

Direction: the Application Client residing on another UE to the MSGin5G Client of the MSGin5G UE

Table A.2.1.2-1: message content for sending a message delivery status report to MSGin5G Client

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Delivery Status | Delivery StatusA.2.2.8 | M | V | 1 |
|  | Message ID | Message IDA.2.2.4 | M | V | 16 |
|  | Reply-to Message ID | Reply-to Message IDA.2.2.13 | M | V | 16 |

If using the message content specified in table A.2.1.2-1, the Application Client may generate a message according to 6.4.2.3.2 and send the generated message to the MSGin5G Client.

### A.2.1.3 for sending a message to Application Client

For sending a message to Application Client, the MSGin5G Client may use the message content specified in Table A.2.1.3-1.

Message type: MESSAGE RECEIVED REQUEST

Significance: dual

Direction: the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE

Table A.2.1.3-1: message content for sending a message to Application Client

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Message ID | Message IDA.2.2.4 | M | V | 16 |
|  | Payload | PayloadA.2.2.5 | M | LV-E | 2-65537 |
| F | Originator Address | Originator AddressA.2.2.10 | O | TLV | 3-257 |
| E | Group ID | Group IDA.2.2.11 | O | TLV | 3-257 |
| B | Delivery status required | Delivery status requiredA.2.2.6 | O | TV | 1 |
| C | Priority | PriorityA.2.2.9 | O | TV | 1 |

If using the message content specified in table A.2.1.3-1, the MSGin5G Client may generate a message according to 6.4.2.2.1 and send the generated message to the Application Client.

### A.2.1.4 for sending a message delivery status report to Application Client

For sending a message delivery status report to Application Client, the MSGin5G Client may use the message content specified in Table A.2.1.4-1.

Message type: DELIVERY REPORT RECEIVED REQUEST

Significance: dual

Direction: the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE

Table A.2.1.4-1: message content for sending a message delivery status report to MSGin5G Client

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Delivery Status | Delivery StatusA.2.2.8 | M | V | 1 |
|  | Message ID | Message IDA.2.2.4 | M | V | 16 |
|  | Reply-to Message ID | Reply-to Message IDA.2.2.13 | M | V | 16 |

If using the message content specified in table A.2.1.4-1, the MSGin5G Client may generate a message according to 6.4.2.2.3 and send the generated message to the Application Client.

### A.2.1.5 for sending a message sending response to Application Client

For sending a message sending response to Application Client, the MSGin5G Client may use the message content specified in Table A.2.1.5-1.

Message type: MESSAGE SENDING RESPONSE

Significance: dual

Direction: the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE

Table A.2.1.5-1: message content for message sending response

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Result | ResultA.2.2.11 | M | V | 1 |
|  | Spare half octet | Spare half octetA.2.2.18 | M | V | 1/2 |
| X | Failure Reason  | MSGin5G causeA.2.2.17 | O | TV | 2 |

If using the message content specified in table A.2.1.5-1, the MSGin5G Client may generate a message according to 6.4.2.2.3 and send the generated message to the Application Client.

### A.2.1.6 for sending a message received response to MSGin5G Client

For sending a message sending response to MSGin5G Client, the Application Client residing on another UE may use the message content specified in Table A.2.1.6-1.

Message type: MESSAGE RECEIVED RESPONSE

Significance: dual

Direction: the Application Client residing on another UE to the MSGin5G Client of the MSGin5G UE

Table A.2.1.6-1: message content for message sending response

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Result | ResultA.2.2.11 | M | V | 1 |
|  | Spare half octet | Spare half octetA.2.2.18 | M | V | 1/2 |
| X | Failure Reason  | MSGin5G causeA.2.2.17 | O | TV | 2 |

If using the message content specified in table A.2.1.6-1, the Application Client may generate a message according to 6.4.2.3.3 and send the generated message to the MSGin5G Client.

### A.2.1.7 Registration Request

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

Message type: REGISTRATION REQUEST

Significance: dual

Direction: the Application Client residing on another UE to the MSGin5G Client of the MSGin5G UE

Table A.2.1.7: REGISTRATION REQUEST content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Application ID | Application IDA.2.2.3 | M | V | 2 |
|  | Credential information | Credential informationA.2.2.15 | M | LV | 3-65537 |

### A.2.1.8 Registration Accept

The Registration Accept is sent by the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE to indicate the registration is accepted. See table A.2.1.8.

Message type: REGISTRATION ACCEPT

Significance: dual

Direction: the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE

Table A.2.1.8: REGISTRATION ACCEPT content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Registration ID | MSCin5G Registration IDA.2.2.16 | M | V | 6 |

### A.2.1.9 Registration Reject

The Registration Reject is sent by the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE to indicate the registration is rejected. See table A.2.1.9.

Message type: REGISTRATION REJECT

Significance: dual

Direction: the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE

Table A.2.1.9: REGISTRATION REJECT content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Failure Reason | MSGin5G causeA.2.2.17 | M | V | 1 |

### A.2.1.10 De-registration Request

The De-registration Request is sent by the Application Client residing on another UE to the MSGin5G Client of the MSGin5G UE to initiate de-registration. See table A.2.1.10.

Message type: DEREGISTRATION REQUEST

Significance: dual

Direction: the Application Client residing on another UE to the MSGin5G Client of the MSGin5G UE

Table A.2.1.10: DEREGISTRATION REQUEST content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Registration ID | MSCin5G Registration IDA.2.2.16 | M | V | 6 |

### A.2.1.11 De-registration Accept

The De-registration Accept is sent by the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE to indicate the de-registration is accepted. See table A.2.1.11.

Message type: DEREGISTRATION ACCEPT

Significance: dual

Direction: the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE

Table A.2.1.11: DEREGISTRATION ACCEPT content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Registration ID | MSCin5G Registration IDA.2.2.16 | M | V | 6 |

### A.2.1.12 De-registration Reject

The De-registration Reject is sent by the MSGin5G Client of the MSGin5G UE to the Application Client residing on another UE to indicate the de-registration is rejected. See table A.2.1.12.

Message type: DEREGISTRATION REJECT

Significance: dual

Direction: the MSGin5G Client of the MSGin5GUE to the Application Client residing on another UE

Table A.2.1.12: DEREGISTRATION REJECT content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Message Type | Message TypeA.2.2.1 | M | V | 1 |
|  | Failure Reason | MSGin5G causeA.2.2.17 | M | V | 1 |

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

### A.2.2.2 Target address

The Target address information element is used to indicate the address of target recipient or the target group while sending message from Application Client residing on another UE.

The Target address information element is coded as shown in figure A.2.2.2-1 and table A.2.2.2-1.

The Target address information element is a type 4 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of Target address contents | octet 1 |
| Target address type value | octet 2 |
|  | octet 3 |
| Target address contents |  |
|  | octet n |

Figure A.2.2.2-1: Target address information element

Table A.2.2.2-1: Target address information element

|  |
| --- |
| Target Address type value (octet 2)Bits |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | IPv4 address |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | IPv6 address |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | FQDN |
| All other values are reserved. |
| Target address content is contained in octet 6 to octet n; The maximum value depends on the length of FQDN. |
|  |
| If Target address type value indicates IPv4 address, the Target address contents in octet 3 to octet 6 contains an IPv4 address.If Target address type value indicates IPv6 address, the Target address contents in octet 3 to octet 18 contains an IPv6 address.If Target address type indicates FQDN, the Target address contents in octet 3 to octet n contains an FQDN encoded as defined in clause 28.3.2 of 3GPP TS 23.003 [18]. |

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

### A.2.2.10 Originator Address

The Originator Address information element is used to indicate address of originating UE/AS while sending message to Application Client residing on another UE.

The Originator Address information element is coded as shown in Figure A.2.2.10-1 and Table A.2.2.10-1.

The Originator Address information element is a type 4 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Originator Address TEI | octet 1 |
| Length of Originator Address contents | octet 2 |
|  | octet 3 |
| Originator Address contents |  |
|  | octet n |

Figure A.2.2.10-1: Originator Address information element

Table A.2.2.10-1: Originator Address information element

|  |
| --- |
| Originator Address is contained in octet 3 to octet n; Max value of 255 octets. |
|  |
|  |

### A.2.2.11 Group ID

The Group ID information element is used to indicate the group which the message is from while sending message to Application Client residing on another UE.

The Group ID information element is coded as shown in Figure A.2.2.11-1 and Table A.2.2.11-1.

The Group ID information element is a type 4 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Group ID IEI | octet 1 |
| Length of Group ID contents | octet 2 |
|  | octet 3 |
| Group ID contents |  |
|  | octet n |

Figure A.2.2.11-1: Group ID information element

Table A.2.2.11-1: Group ID information element

|  |
| --- |
| Group ID is contained in octet 3 to octet n; Max value of 255 octets. |
|  |
|  |