**3GPP TSG-SA WG6 Meeting #52-bis-e S6-230389**

**e-meeting, 11th – 20th January 2023 (revision of S6-230159)**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | The MSGin5G Client Profile handling on MSGin5G Server | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Mobile | | | | | | | | | |
| ***Source to TSG:*** | SA6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMARCH\_Ph2 | | | | |  | ***Date:*** | | | 2023-01-07 |
|  |  | | | |  | |  | | |  |
| ***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 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)* | |
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| ***Reason for change:*** | | How to handle the MSGin5G Client/Non-MSGin5G UE Profile specified in the registration procedures are not clear in current version of TS23.554. It is not clear why it can be used in other procedures. This CR is proposed to add the requirements of MSGin5G Client/Non-MSGin5G UE Profile handling in the registration procedures. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR is proposed to add the requirements of MSGin5G Client/Non-MSGin5G UE Profile handling in the registration procedures. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | How to handle the MSGin5G Client/Non-MSGin5G UE Profile specified in the registration procedures are not clear. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.2.1, 8.2.3, 8.2.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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: the cases of removing Client Profile from the MSGin5G Server are modified. | | | | | | | | |

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

### 8.2.1 MSGin5G UE Registration

The signalling flow for MSGin5G UE registration is illustrated in figure 8.2.1-1. The procedure assumes that the MSGin5G UE is responsible for initiating registration to the MSGin5G Server in order to establish association with the MSGin5G Server to receive MSGin5G Services.

Pre-conditions:

1. The MSGin5G UE has connected to the serving network successfully.

2. The MSGin5G UE has successfully completed the Configuration procedure; alternatively, a UE Service ID and the MSGin5G Server address have been pre-configured on the MSGin5G UE.

3. Both the MSGin5G UE and MSGin5G Server have been configured with the necessary credentials to enable authenticating one another.



Figure 8.2.1-1: MSGin5G Client registration

1. The MSGin5G UE sends an MSGin5G UE registration request to the MSGin5G Server. The request includes the UE Service ID and MSGin5G Client Profile as detailed in Table 8.2.1-1.

Table 8.2.1-1: MSGin5G UE registration request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the requesting MSGin5G UE. |
| MSGin5G Client Profile | O | Set of parameters describing the MSGin5G Client |
| >MSGin5G Client Triggering Information | O | UE Identifier (i.e., MSISDN, external ID), port number(s) and associated protocol (e.g., SMS, NIDD, etc.) for device triggering. The MSGin5G Server uses the information in step 5 of clause 8.8.3. See Table 8.2.1-2. |
| >MSGin5G Client Communication Availability | O | Communication availability information for the MSGin5G Client to receive MSGin5G messages. This IE informs the MSGin5G Server if the client has a specific application-level schedule/periodicity to its MSGin5G communications, which may be used in conjunction with UE reachability monitoring to determine whether and when MSGin5G communications are attempted. See Table 8.2.1-3. |
| > MSGin5G Client Supported Maximum MSGin5G segment size | O | The Maximum MSGin5G segment size can be used by the MSGin5G Server to deliver message to the client served by it in its MSGin5G service domain. The MSGin5G message sent to the MSGin5G Client should be segmented by the MSGin5G Server serves the receiver if the message size is bigger than the MSGin5G Client Supported Maximum MSGin5G segment size as specified in clause 8.5.  The value of this IE is decided by the MSGin5G Client, and is depended on the MSGin5G Client capabilities, e.g. supported transport, computing capability or application processing time limitation.  If this IE is not included, the MSGin5G Server shall use the pre-configured global value within the MSGin5G service domain. |

Table 8.2.1-2: MSGin5G Client Triggering Information

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MSGin5G UE ID | M | Identity of the UE hosting the MSGin5G Client (e.g., the External Identifier defined in TS 23.682 [8], or an MSISDN) |
| MSGin5G Client Ports | M | List of port numbers that the MSGin5G Client listens on for device triggers from the MSGin5G Server. Also included with each port number is an associated protocol (e.g., SMS, NIDD, etc.). |

Table 8.2.1-3: MSGin5G Client Communication Availability

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Scheduled communication time | M | Time when the UE becomes available for communication. |
| Communication duration time | M | Duration time of periodic communication. |
| Periodic communication indicator | O | Identifies whether the client communicates periodically or not, e.g., on demand. |
| Periodic communication interval | O | Interval Time of periodic communication. This IE is mandatory if the Periodic communication indicator indicates periodic communications. |
| Data size indication | O | Indicates the expected data size to be exchanged during the communication duration. |
| Store and forward option | O | Indicates opting out of store and forward services for incoming MSGin5G requests. The MSGin5G Server uses the information to determine whether Store and Forward procedure applies as specified in clause 8.3.6. |

2. Upon receiving the request, the MSGin5G Server initiates authentication procedures with the MSGin5G Client and authorizes the MSGin5G Client. If the registration is successful, the MSGin5G Server stores the UE Service ID and associated MSGin5G Client Profile. The UE Service ID and associated MSGin5G Client Profile should be maintained on the MSGin5G Server until one of the following cases applies:

a) the MSGin5G UE de-registers from the MSGin5G Server as specified in clause 8.2.2;

b) the MSGin5G UE re-registered successfully with a different MSGin5G Client Profile; In this case, the MSGin5G Server shall store the UE Service ID and associated new MSGin5G Client Profile;

c) the MSGin5G UE registration is expired; or

d) the MSGin5G Server deletes the MSGin5G UE registration as required by the service provider.

NOTE: The authentication procedures in step 2 are built on top of the transport layer mechanism specified in Annex Y.2 of 3GPP TS 33.501 [16].

3. The MSGin5G Server sends an MSGin5G UE registration response to the MSGin5G UE. The response includes the information elements as detailed in Table 8.2.1-4. If the registration is successful, the MSGin5G Server stores the UE Service ID and associated MSGin5G Client Profile.

Table 8.2.1-4: MSGin5G UE registration response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the requesting MSGin5G UE. |
| Registration result | M | Indication if the registration is success or failure |
| Failure Cause | O | The reason for failure |

### 8.2.2 MSGin5G UE De-Registration

By de-registering, the MSGin5G UE informs the MSGin5G Server that it wishes to terminate its association with the MSGin5G Server.

NOTE 1: De-registration implies that Client Triggering Information and the Client Communication Availability Information are no longer valid.

The procedure assumes that the MSGin5G UE is responsible for initiating the de-registration from the MSGin5G Server. The signalling flow for MSGin5G UE de-registration is illustrated in figure 8.2.2-1.

Pre-conditions:

1. The MSGin5G UE is registered to the MSGin5G Server.



Figure 8.2.2-1: MSGin5G UE de-registration

1. The MSGin5G UE determines to de-register from the MSGin5G Server.

2. The MSGin5G UE sends an MSGin5G UE de-registration request to the MSGin5G Server that includes the UE Service ID, as detailed in Table 8.2.2-1.

Table 8.2.2-1: MSGin5G UE de-registration request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the MSGin5G UE. |

3. The MSGin5G Server may initiate authentication procedures with the MSGin5G Client and authorizes the MSGin5G Client. The MSGin5G Server deletes any applicable UE Service ID and associated MSGin5G Client Profile that it has stored.

NOTE 2: The authentication procedures in step 3 are built on top of the transport layer mechanism specified in Annex Y.2 of 3GPP TS 33.501 [16].

4. The MSGin5G Server an MSGin5G UE de-registration response as detailed in Table 8.2.2-2 to the MSGin5G UE.

Table 8.2.2-2: MSGin5G UE de-registration response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the MSGin5G UE. |
| De-registration result | M | Indication if the de-registration is success or failure |
| Failure Cause | O | The reason for failure |

### 8.2.3 Non-MSGin5G UE Registration

Non-MSGin5G UEs (i.e., Legacy 3GPP UEs or Non-3GPP UEs) are connected to the MSGin5G Server through a Message Gateway. The Message Gateway performs registration with the MSGin5G Server on behalf of the Non MSGin5G UEs, based on pre-provisioned information when receives a registration request from the Non MSGin5G UE, or gets the knowledge of that Non-MSGin5G UE is ready for the MSGin5G service. After the procedure is completed, the Message Gateway may communicate the result to the Non-MSGin5G UE to enable MSGin5G Services at the Non MSGin5G UEs.

NOTE: The communication procedure between Non-MSGin5G UE and Message Gateway is out of scope of this document.

The signalling flow is illustrated in figure 8.2.3-1.

Pre-conditions:

1. The Message Gateway has been pre-configured with the MSGin5G Server address.

2. The Message Gateway has been configured with the necessary information as specified in clause 8.1.3, i.e. UE Service ID and credentials on behalf of Non- MSGin5G UE, and may also been configured with Non-MSGin5G UE Profile if available, to enable authentication and Non- MSGin5G UE registration at the Message Server.

3. A secured connection has been established between the Message Gateway and the MSGin5G Server.



Figure 8.2.3-1: Non-MSGin5G UE registration

1. The Message Gateway sends the Non-MSGin5G UE registration request to the MSGin5G Server. The request includes the information pre-configured to the Message Gateway or provided by the Non-MSGin5G UE (e.g. in a non-MSGin5G registration request) and detailed in Table 8.2.3-1.

Table 8.2.3-1: Non-MSGin5G UE registration request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the requesting Non-MSGin5G UE. |
| MGW Service ID | M | The service identifier of the Message Gateway performing registration on behalf of a Non-MSGin5G UE |
| Non-MSGin5G UE Profile | O | Set of parameters describing the Non-MSGin5G UE |
| >Non-MSGin5G UE Communication Availability | O | Communication availability information for the Non-MSGin5G UE to receive messages. This IE informs the MSGin5G Server if the Non-MSGin5G UE has a specific application-level schedule/periodicity to its MSGin5G communications, which may be used to determine whether and when MSGin5G communications are attempted. See Table 8.2.1-3. |

2. Upon receiving the request, the MSGin5G Server initiates authentication procedures with the Message Gateway on behalf of the Non-MSGin5G Client and authorises the Non-MSGin5G UE to receive the MSGin5G Service. If the registration is successful, the MSGin5G Server stores the UE Service ID and associated Non-MSGin5G UE Profile. The UE Service ID and associated Non-MSGin5G UE Profile should be maintained on the MSGin5G Server until one of the following cases applies:

a) the Non-MSGin5G UE de-registers from the MSGin5G Server as specified in clause 8.2.4;

b) the Non-MSGin5G UE re-registered successfully with a different Non-MSGin5G UE Profile; In this case, the MSGin5G Server shall store the UE Service ID and associated new Non-MSGin5G UE Profile;

c) the Non-MSGin5G UE registration is expired; or

d) the MSGin5G Server deletes the Non-MSGin5G UE registration as required by the service provider.

NOTE: The authentication procedures in step 2 are built on top of the transport layer mechanism specified in Annex Y.2 of 3GPP TS 33.501 [16].

3. The MSGin5G Server returns the result of the registration in the Non-MSGin5G UE registration response message with the information detailed in table 8.2.1-4, to the Message Gateway.

### 8.2.4 Non-MSGin5G UE De-registration

The Message Gateway performs de-registration with the MSGin5G Server on behalf of the Non-MSGin5G UEs, in order to terminate services from the MSGin5G Server.

NOTE: After the procedure is completed, the Message Gateway may communicate the result to the requesting Non-MSGin5G UE and the procedure is out of scope of this document.

The procedure assumes that the Message Gateway is responsible for initiating the de-registration from the MSGin5G Server on behalf of the Non-MSGin5G UE. The signaling flow for Non-MSGin5G UE de-registration is illustrated in figure 8.2.4-1.

Pre-conditions:

1. The Message Gateway successfully performed registration with the MSGin5G Server on behalf of the Non-MSGin5G UE.



Figure 8.2.4-1: Non-MSGin5G UE de-registration

1. The Message Gateway determines to de-register the Non-MSGin5G UE with the MSGin5G Server.

2. The Message Gateway sends a Non-MSGin5G UE de-registration request to the MSGin5G Server that includes the UE Service ID associated with the Non-MSGin5G UE, as shown in Table 8.2.4-1.

Table 8.2.4-1: Non-MSGin5G UE de-registration request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the Non-MSGin5G UE. |

3. Upon receiving the request, the MSGin5G Server may initiate authentication procedures with the Message Gateway on behalf of the Non-MSGin5G Client. The MSGin5G Server deletes any applicable UE Service ID and associated Non-MSGin5G UE Profile that it has stored.

NOTE: The authentication procedures in step 3 are built on top of the transport layer mechanism specified in Annex Y.2 of 3GPP TS 33.501 [16].

4. The MSGin5G Server replies with a Non-MSGin5G UE de-registration response as shown in table 8.2.4-2.

Table 8.2.4-2: Non-MSGin5G UE De-registration response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| UE Service ID | M | UE service identifier assigned to the Non-MSGin5G UE. |
| De-registration result | M | Indication if the de-registration is success or failure |
| Failure Cause | O | The reason for failure |