**3GPP TSG-SA WG6 Meeting #42-e S6-210566**

**e-meeting, 1st – 9th March 2021 (revision of S6-21xxxx)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.434** | **CR** | **0045** | **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 | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Service identification in location management procedures | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CATT | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eSEAL | | | | |  | ***Date:*** | | | 2021-02-24 |
|  |  | | | |  | |  | | |  |
| ***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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The location reporting provided by SEAL shall be VAL service specific, i.e. the Location Management Server shall be able to distinguish the VAL services when handling the service requests for location information.  In the current specification the location service requests use VAL User ID or VAL UE ID as the target identity for location fetching. Both VAL User ID and VAL UE ID are unique identities within the specific VAL service. However, the identity (e.g. the MSISDN as a type of GPSI) of a UE may be used across multiple VAL services. The potential risks exist that the UE’s location information is available to the irrevelant VAL services or to the VAL user of an irrevelant VAL service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add VAL Service ID in the information flows of service requests for location. Address the service requests are for specified VAL service in the procedures. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Risks exist for location information to be achieved by irrevelant VAL services or parties. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.3.2.0, 9.3.2.3, 9.3.2.4, 9.3.2.5, 9.3.2.8, 9.3.3.2, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.9 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

#### 9.3.2.0 Location reporting configuration request

Table 9.3.2.0-1 describes the information flow from the location management client to the location management server for requesting the location reporting configuration.

Table 9.3.2.0-1: Location reporting configuration request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identity | M | Identity of the VAL user or identity of the VAL UE. |
| VAL service ID | M | Identity of the VAL service for which the location reporting configuration is requested. |

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

#### 9.3.2.3 Location information request

Table 9.3.2.3-1 describes the information flow from the VAL server to the location management server and from the location management server to the location management client for requesting an immediate location information report.

Table 9.3.2.3-1: Location information request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identity list | M | List of VAL users or VAL UEs whose location information is requested |
| VAL service ID | M | Identity of the VAL service for which the location information is requested. |

Editor’s Note: It’s FFS the security aspects for LM-Uu and LM-S in relation to the VAL service ID that need to be coordinated with SA3.

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

#### 9.3.2.4 Location reporting trigger

Table 9.3.2.4-1 describes the information flow from the location management client or VAL server to the location management server for triggering a location reporting procedure.

Table 9.3.2.4-1: Location reporting trigger

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identity | M (NOTE 1) | Identity of the requesting authorized VAL user or VAL UE |
| Identity | M (NOTE 1) | Identity of the requested VAL user or VAL UE |
| VAL service ID | M | Identity of the VAL service for which the location reporting trigger is set. |
| Immediate Report Indicator | O (NOTE 2) | Indicates whether an immediate location report is required |
| Requested location information | O (NOTE 2) | Identifies what location information is requested |
| Triggering criteria | O (NOTE 2) | Identifies when the client will send the location report |
| Minimum time between consecutive reports | O (NOTE 2) | Defaults to 0 if absent otherwise indicates the interval time between consecutive reports |
| Endpoint information | O | Information of the endpoint of the requesting VAL server to which the location report notification has to be sent. It is provided if Immediate Report Indicator is set to required. |
| NOTE 1: The identity of the requesting VAL user/UE and the requested VAL user/UE should belong to the same VAL service.  NOTE 2: At least one of these rows shall be present. | | |

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

#### 9.3.2.5 Location information subscription request

Table 9.3.2.5-1 describes the information flow from the VAL server to the location management server for location information subscription request.

Table 9.3.2.5-1: Location information subscription request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identity | M | Identity of the requesting VAL user or VAL UE |
| Identities list | M | List of VAL users or VAL UEs whose location information is requested. |
| VAL service ID | M | Identity of the VAL service for which the location information is subscribed. |
| Time between consecutive reports | M | It indicates the interval time between consecutive reports |

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

#### 9.3.2.8 Location reporting configuration cancel request

Table 9.3.2.8-1 describes the location reporting configuration cancel request information flow from the location management client or VAL server to the location management server.

Table 9.3.2.8-1: Location reporting configuration cancel request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identity | M | Identity of the requesting authorized VAL user or VAL UE |
| Identity | M | Identity of the requested VAL user or VAL UE |
| VAL service ID | M | Identity of the VAL service for which the location reporting configuration is requested to be canceled. |

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

#### 9.3.3.2 Fetching location reporting configuration

Figure 9.3.3.2-1 illustrates the procedure for fetching location reporting configuration.

Pre-condition:

- If multicast delivery mode is used, the MBMS bearer being used is activated by the location management server.

- The location management client is aware that the location reporting configuration is available at the location management server.



Figure 9.3.3.2-1: Fetching location reporting configuration procedure

1. The location management client sends location reporting configuration request message to the location management server.

2. The location management server sends location reporting configuration message to the location management client(s) containing the initial location reporting event triggers configuration (or a subsequent update) for the requested VAL service, e.g. minimum time between consecutive reports, SAI changes, or ECGI changes for reporting the location of the VAL UE. This message can be sent over a unicast bearer to a specific location management client or as a group message over an MBMS bearer to update the location reporting configuration for multiple location management clients at the same time.

NOTE 1: The location reporting configuration information can be made part of the user profile, in which case the sending of the message is not necessary.

NOTE 2: Different location management clients may be given different location reporting criteria.

3. The location management client stores or updates the location reporting event triggers configuration. A location reporting event occurs, triggering step 3.

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

### 9.3.4 On-demand location reporting procedure

The location management server can request UE location information at any time by sending a location information request to the location management client, which may trigger location management client to immediately send the location report.



Figure 9.3.4-1: On-demand location information reporting procedure

1. Based on configurations such as periodical location information timer, or location information request from other entities (e.g., another location management client, VAL server), location management server initiates the immediately request location information from the location management client.

2. The location management server sends a location information request to the location management client.

3. VAL user or VAL UE is notified and asked about the permission to share its location for the requested VAL service. VAL user can accept or deny the request.

4. The location management client immediately responds to the location management server with a report containing location information identified by the location management server and available to the location management client.

5. Upon receiving the report, the location management server updates location of the reporting location management client. If the location management server does not have location information of the reporting location management client before, then just stores the reporting location information for that location management client.

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

### 9.3.5 Client-triggered or VAL server-triggered location reporting procedure

Figure 9.3.5-1 illustrates the high level procedure of client-triggered or VAL server-triggered location reporting.



Figure 9.3.5-1: Client-triggered location reporting procedure

1. Location management client 2 (authorized VAL user or VAL UE) or VAL server sends a location reporting trigger to the location management server to activate a location reporting procedure for obtaining the location information of location management client 1 for the specified VAL service.

NOTE: Step 1 can be performed when Location management client 2 or VAL server require to update the location reporting trigger.

2. Location management server checks whether location management client 2 or VAL server is authorized to send a location reporting trigger. Depending on the information specified by the location reporting trigger, location management server initiates an on-demand location reporting procedure or an event-triggered location reporting procedure for the location of location management client 1.

3. Once the location information of the location management client 1 is available in the location management server by the on-demand location reporting procedure, a location information report is sent to the location management client 2 or VAL server.

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

### 9.3.6 Location reporting triggers configuration cancel

Figure 9.3.6-1 illustrates the procedure used for cancelling the location reporting triggers configuration at the target Location management client.

Pre-conditions:

1. The location management server has subscribed the location management client 2 location with the location reporting event triggers.

2. If multicast delivery mode is used, the MBMS bearer being used is activated by the location management server.



Figure 9.3.6-1: Location reporting triggers configuration cancel

1. The location management client 1 (authorized VAL user or VAL UE) or VAL server sends a location reporting configuration cancel request for the specified VAL service to the location management server (1a). The location management server sends the location reporting configuration cancel request to the location management client 2 to stop receiving the UE location information (1b). This message can be sent via unicast or multicast.

NOTE: Step 1b can be initiated without step 1a.

2. The location management client invalidates the location reporting triggers configuration and no longer reports its location to the location management server.

3. The location management client 2 sends the location reporting configuration cancel response to the location management server (3a) as an acknowledgement. The location management server sends the location reporting configuration cancel response to the location management client 1 (3b) as an acknowledgement.

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

### 9.3.7 Location information subscription procedure

Figure 9.3.7-1 illustrates the high level procedure of location information subscription request. The same procedure can be applied for location management client and other entities that would like to subscribe to VAL user or VAL UE location information. This procedure is also used for intiating tracking a UE's location.



Figure 9.3.7-1: Location information subscription request procedure

1. The VAL server sends a location information subscription request to the location management server to subscribe location information of one or more VAL users or VAL UEs for the specified VAL service.

2. The location management server shall check if the VAL server is authorized to initiate the location information subscription request. Further, the location management server may initiate location reporting configuration with the location management client of the UE for immediate reporting.

3. The location management server may optionally subscribe for UE location information from 3GPP core network for the UE.

4. The location management server determines the UE location information of the UE as received in steps 3 and 4.

5. The location management server replies with a location information subscription response indicating the subscription status and if immediate reporting was requested, the location information of the VAL UE(s).

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

### 9.3.9 On-demand usage of location information procedure

The VAL server can request UE location information at any time by sending a location information request to the location management server, which may trigger location management server to immediately send the location report.

Figure 9.3.9-1 illustrates the high level procedure of on demand usage of location information. The same procedure can be applied for location management client and other entities that would like to subscribe to location information of VAL user or VAL UE.



Figure 9.3.9-1: On-demand usage of location information procedure

1. VAL server sends a location information request for the specified VAL service to the location management server.

2. The location management server acquires the latest location of the UEs being requested, by triggering an on-demand location report procedure as described in subclause 9.3.4, or from PLMN operator.

3. Then, location management server immediately sends the location information report including the latest location information acquired of one or more VAL users or VAL UEs.

4. VAL server may further share this location information to a group or to another VAL user or VAL UE.

NOTE: For other entities, the step 3 can be skipped if not needed.