**3GPP TSG-SA WG6 Meeting #44-e S6-21xxxx**

**e-meeting, 12th July – 20th July 2021 (revision of S6-21xxxx)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.280** | **CR** | xxxxx | **rev** | **-** | **Current version:** | **17.7.0** |  |
|  | | | | | | | | |
| *For* ***HE******LP*** *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:*** | Clarifications for Location management | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | BDBOS | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | enh3MCPTT | | | | |  | ***Date:*** | | | 2021-07-12 |
|  |  | | | |  | |  | | |  |
| ***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. | | | | | | | | *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:*** | | 1. 10.9.2.5 Split the information flow, into one for MC service server and one for the location management client, as the MC service server does not provide a “MC service ID” 2. 10.9.2.10 Change information flow to “singular” to provide one location information at a time, when multiple LMCs report their location when sharing the same activated functional alias. 3. 10.9.2.13 Correct typo from LM“C“ to LM“S“ and remove „identity“ of MC service server (as not needed) 4. 10.9.3.5 Removal of authentication check for MC service server, as MC service server is implicitly trusted (in one MC system). Adding a NOTE to make clear it is removed on purpose. 5. 10.9.3.6.2 This procedure mentions “location information report”, but from LMS to LMC or LMS to MC service server it should be “location information notification”. Replacement done also in Figure 10.9.3.6.2-1. Removal of authentication check for MC service server, as implicitly trusted. Adding a NOTE to make clear it is removed on purpose. Changed step 4 to send one single location information at a time (to synchronize it with S6-211498 (SA6#43-e) 6. 10.9.3.8.1 Align (functional alias) procedure to match information flow changes made in 10.9.2.10 7. 10.9.3.8.2 As above, align (functional alias) procedure with information flow 10.9.2.10 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Changes are made in the required sub-clauses as described in the “Reason for change” | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Possible misinterpretation in the specification | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 10.9.2.5, 10.9.2.10, 10.9.2.13, 10.9.3.5, 10.9.3.6.2, 10.9.3.8.1, 10.9.3.8.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \*

#### 10.9.2.5 Location information subscription request

Table 10.9.2.5-1 describes the information flow from the MC service server to the location management server for location information subscription request.

Table 10.9.2.5-1: Location information subscription request (MC service server – LMS)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID list | M | List of MC service users whose location information is requested |
| Time between consecutive reports | M (see NOTE) | Indicates the interval time between consecutive reports. The provided time is to be used for all MC service IDs provided in the MC service ID list. |
| NOTE: If the interval time has a value of zero then the location management server will send the Location information notification immediately the location information report is received from the MC service user in the MC service ID list. | | |

Table 10.9.2.5-2 describes the information flow from the location management client to the location management server for location information subscription request.

Table 10.9.2.5-2: Location information subscription request (LMC – LMS)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the requesting MC service user |
| MC service ID list | M | List of MC service users whose location information is requested |
| Time between consecutive reports | M (see NOTE) | Indicates the interval time between consecutive reports. The provided time is to be used for all MC service IDs provided in the MC service ID list. |
| NOTE: If the interval time has a value of zero then the location management server will send the Location information notification immediately the location information report is received from the MC service user in the MC service ID list. | | |

\* \* Second Change \* \* \*

#### 10.9.2.10 Location report response

Table 10.9.2.10-1 describes the information flow from the location management server to the requesting location management client for the location information reporting when using functional alias..

Table 10.9.2.10-1: Location report response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the reporting MC service user whose location information is requested |
| MC service ID | M | Identity of the MC service user who requested the location information based on a provided functional alias |
| Functional alias | M | Functional alias that corresponds to the MC service ID of the reporting MC service user |
| Triggering event | M | Identity of the event that triggered the sending of the report |
| Location Information (see NOTE) | M | Location information for the corresponding functional alias and its MC service ID |
| NOTE: This may contain multiple sets of elements for the MC service user. The following elements shall accompany the location information elements: time of measurement and optional accuracy. The following location information elements shall be optional (configurable) present: longitude, latitude, speed, bearing, altitude, ECGI, MBMS SAIs, with at least one provided. | | |

\* \* Third Change \* \* \*

#### 10.9.2.13 Location information history request

The location management client stored location information, while not reporting location information to the location management server, and subsequently the reporting may start following the reestablishment of a communication link between the location management client and the location management server. Either all or a subset of the stored location information may be requested prior to the location information history reporting.

Table 10.9.2.13-1 describes the information flow from the location management client to the location management server for the location information history request of stored location information.

Table 10.9.2.13-1: Location information history request (LMC – LMS)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the MC service user from whom reports are requested |
| MC service ID | M | Identity of the MC service user who requests location information |
| Number of stored reports (see NOTE) | O | Indicates the number of requested reports |
| Start time (see NOTE) | O | Indicates to send reports having this time of measurement and newer |
| End time (see NOTE) | O | Indicates to send reports having this time of measurement and older |
| Triggered event list (see NOTE) | O | Identifies the criteria when the location management client generated location information, while not reporting location information |
| Minimum time between consecutive reports | O | Defaults to 0 if absent |
| NOTE: If none of these information elements is present, all stored location information shall be reported. Information elements may combined to request a subset of the available location information. | | |

Table 10.9.2.13-2 describes the information flow from location management server to the location management client for the location information history request of stored location information.

Table 10.9.2.13-2: Location information history request (LMS – LMC)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the MC service user from whom reports are requested |
| Number of stored reports (see NOTE) | O | Indicates the number of requested reports |
| Start time (see NOTE) | O | Indicates to send reports having this time of measurement and newer |
| End time (see NOTE) | O | Indicates to send reports having this time of measurement and older |
| Triggered event list (see NOTE) | O | Identifies the criteria when the location management client generated location information, while not reporting location information |
| Minimum time between consecutive reports | O | Defaults to 0 if absent |
| NOTE: If none of these information elements is present, all stored location information shall be reported. Information elements may combined to request a subset of the available location information. | | |

Table 10.9.2.13-3 describes the information flow from the MC service server to the location management server for the location information history request of stored location information.

Table 10.9.2.13-3: Location information history request (MC service server – LMS)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the MC service user from whom reports are requested |
| Number of stored reports (see NOTE) | O | Indicates the number of requested reports |
| Start time (see NOTE) | O | Indicates to send reports having this time of measurement and newer |
| End time (see NOTE) | O | Indicates to send reports having this time of measurement and older |
| Triggered event list (see NOTE) | O | Identifies the criteria when the location management client generated location information, while not reporting location information |
| Minimum time between consecutive reports | O | Defaults to 0 if absent |
| NOTE: If none of these information elements is present, all stored location information shall be reported. Information elements may combined to request a subset of the available location information. | | |

\* \* Fourth Change \* \* \*

#### 10.9.3.5 Location information subscription procedure

NOTE 1: This procedure is valid for single MC system operation only.

Figure 10.9.3.5-1 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 MC service user location information.



Figure 10.9.3.5-1: Location information subscription request procedure

1. MC service server or location management client sends a location information subscription request to the location management server to subscribe location information of one or more MC service users.

2. The location management server checks if the location management client is authorized to initiate the location information subscription request.

NOTE 2: The location management server needs not to check the MC service server for authorization.

3. The location management server replies with a location information subscription response indicating the subscription status.

\* \* Fifth Change \* \* \*

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

NOTE 1: This procedure is valid for single MC system operation only.

The MC service server or the location management client can request location information at any time by sending a location information request to the location management server, which may trigger location management server to send the location information notification immediately.

Figure 10.9.3.6.2-1 illustrates the high level procedure of on-demand usage of location information. The same procedure can be applied for other entities that would like to subscribe to location information at the location management server of an MC service user.



Figure 10.9.3.6.2-1: On-demand usage of location information procedure

1. MC service server or location management client send a location information request to the location management server.

2. The location management server checks if the location management client is authorized to request the location information.

NOTE 2: The location management server needs not to check the MC service server for authorization.

3. The location management server acquires the latest location of the MC service clients being requested, by triggering an on-demand location report procedure as described in clause 10.9.3.2, or from PLMN operator (e.g. LCS network).

4. Then, location management server immediately sends the location information notification including the latest location information acquired of one MC service user to the MC service server or to the location management client.

\* \* Sixth Change \* \* \*

#### 10.9.3.8 Location management using functional alias

##### 10.9.3.8.1 Client-triggered one-time location information report

Figure 10.9.3.8.1-1 illustrates the procedure when a location management client requests one-time location information from other location management clients for location information reporting using functional alias, which can be shared between several MC service users. Under this condition, the actual location of all MC service users sharing the same functional alias are reported.

Pre-conditions:

1. MC service client 2 and MC service client 3 share the same functional alias.

2. MC service client 2 and MC service client 3 activated the functional alias.

3. MC service client 1 may have an activated functional alias.

4. The location management server has subscribed to the functional alias controlling MC service server within the MC system for functional alias activation/de-activation updates.



Figure 10.9.3.8.1-1: One-time location information report for shared functional alias

1. Location management client 1 sends a location reporting trigger, limited to one MC service at the time, to the location management server to activate a one-time location report procedure which shall retrieve the location information of the MC service users that may share the contained functional alias. Location management client 1 may include its own activated functional alias.

2. Location management server checks whether location management client 1 is authorized to send a location reporting trigger.

3. The location management server uses on-demand location reporting procedures. The location information request contains the functional alias provided by the location management client 1 to address location management client 2 and location management client 3.

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

5. The location management server sends one location report response to location management client 1 containing the provided location information for each location management client using the given functional alias. If not all location management clients immediately respond to the location management server, i.e. other reports some time later, subsequent location reporting responses may be sent.

\* \* Seventh Change \* \* \*

##### 10.9.3.8.2 Client-triggered periodic location information report

Figure 10.9.3.8.2-1 illustrates the procedure when a location management client requests periodic location information from other location management clients for location information reporting using functional aliases which may be shared between several MC service users. Under this condition, the actual location of all MC service users sharing the same functional alias are reported.

Pre-conditions:

1. MC service client 2 and MC service client 3 share the same functional alias.

2. MC service client 2 and MC service client 3 activated the functional alias.

3. MC service client 1 may have an activated functional alias.

4. The location management server has subscribed to the functional alias controlling MC service server within the MC system for functional alias activation/de-activation updates.



Figure 10.9.3.8.2-1: Periodic location information report for shared functional alias

1. Location management client 1 sends a location reporting trigger, limited to one MC service at the time, to the location management server to activate a periodic location reporting procedure which shall retrieve the location information of the MC service users sharing the contained functional alias. Location management client 1 may include its own activated functional alias.

2. Location management server checks whether location management client 1 is authorized to send a location reporting trigger.

3. Depending on the information given by the location reporting trigger, the location management server uses event-triggered location information procedure and immediately send location information request to the location management clients that contains the functional alias requested by the location management client 1.

4. Upon receiving the reports, the location management server updates location of the reporting location management clients.

5. Based on the received location information reports, the location management server will periodically issue a location report response for each location management client at a time encompassing the MC service ID, the associated functional alias and the individual location information of the addressed MC service ID.

NOTE 1: If a functional alias is deactivated for an MC service client, the corresponding location management client stops sending periodic location information reports.

NOTE 2: If a functional alias has been newly activated for an MC service client, the location management server activates location information reporting for this location management client.

NOTE 3: If a functional alias is simultaneously shared between several MC service IDs, all location management clients with the associated MC service IDs will send the location report until the functional alias status change, e.g. take-over, for the individual MC service ID.

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