**3GPP TSG-SA WG6 Meeting #37-e S6-200641**

**e-meeting, 14th – 26th May 2020 (revision of S6-xxxxxx)**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **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:*** | Location history reporting | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | BDBOS, BMWi, KRRI | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | enh3MCPTT | | | | |  | ***Date:*** | | | 2020-05-25 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Currently existing information flows and procedures do not support the transmission of stored location information of an MC service user after returning from off-network operation.  [R-5.11-009] in 3GPP TS 22.280 in clause 5.11 for on-network and off-network location reports based on triggered events.  Clause 7.1 in 3GPP TS 22.280 describes in general that MC services available during off-network are functional comparable to MC services during on-network and this includes location management, as an essential feature of MC communication. While triggered location reports are available during on-network operation, the same or modified off-network triggers allow such MC service continuity while off-network operation. The location reports provided after returning to on-network operation.  Use case #5, solutions #6 and #8 discussed in 3GPP TR 23.744. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | New information flow and new procedure for the transmission of stored, but triggered location reports after returning to on-network operation. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The operational analysis of location information triggered during off-network operation cannot be included into operative-tactical decisions after returning to on-network operation.. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 10.9.2.13 (new), 10.9.2.14 (new), 10.9.3.9 (new), 10.9.3.9.1 (new), 10.9.3.9.2 (new), 10.9.3.9.2.1 (new), 10.9.3.9.2.2 (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.280 CR 0252, CR 0254 | | |
| ***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 \* \* \* \*

#### 10.9.2.13 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 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 – LMC)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the MC service user from whom reports are requested |
| MC service ID | O | Identity of the MC service user, who has requested 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. | | |

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

#### 10.9.2.14 Location information history report

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.

Table 10.9.2.14-1 describes the information flow from the location management client to the location management server for the location information history reporting of stored location information.

Table 10.9.2.14-1: Location information history report (LMC – LMS)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID list | M | List of identities of the reporting MC service user (e.g. MCPTT ID, MCData ID, MCVideo ID) |
| Triggered event | M | Identifies the criterion when the location management client generated location information, while not reporting location information |
| Location Information (see NOTE 1) | M | Location information |
| History report (see NOTE 2) | O | Location information history report indicator |
| NOTE 1: 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.  NOTE 2: Only present, if triggering criteria in emergency cases or triggering criteria in non-emergency cases used. | | |

Table 10.9.2.14-2 describes the information flow from the location management server to the location management client for the location information history reporting of stored location information.

Table 10.9.2.14-2: Location information history report (LMS – LMC)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the reporting MC service user |
| MC service ID | M | Identity of the MC service user, who has requested location information |
| Triggered event | M | Identifies the criterion when the location management client generated location information, while not reporting location information |
| Location Information (see NOTE 1) | M | Location information |
| History report (see NOTE 2) | O | Location information history report indicator |
| NOTE 1: 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.  NOTE 2: Only present, if triggering criteria in emergency cases or triggering criteria in non-emergency cases used. | | |

Table 10.9.2.14-3 describes the information flow from the location management server to the MC service server for the location information history reporting of stored location information.

Table 10.9.2.14-3: Location information history report (LMS - MC service server)

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MC service ID | M | Identity of the reporting MC service user |
| Triggered event | M | Identifies the criterion when the location management client generated location information, while not reporting location information |
| Location Information (see NOTE 1) | M | Location information |
| History report (see NOTE 2) | O | Location information history report indicator |
| NOTE 1: 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.  NOTE 2: Only present, if triggering criteria in emergency cases or triggering criteria in non-emergency cases used. | | |

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

#### 10.9.3.9 Usage of location history reporting procedure

##### 10.9.3.9.1 General

The location management client may get into a state not reporting location information to the location management server at any time after the initial location reporting configuration was provided by the location management server. If any location information trigger criterion applies, while not reporting location information to the location management server, the location management client stores the corresponding location information.

Trigger criteria while not reporting location information to the location management server may vary from trigger criteria while reporting location information to the location management server. Such trigger criteria may for example include not reported distance travelled, not reported elapsed time, not reported call initiation, not reported emergency alert, not reported emergency group call, not reported imminent peril group call and not reported emergency private call.

##### 10.9.3.9.2 Report location history procedure

###### 10.9.3.9.2.1 On-demand report location history procedure (LMC – LMS)

The location management server can request stored location information at any time from the location management client, following a return to report location information to the location management server.

Figure 10.9.3.9.2.1-1 illustrates the procedure for the on-demand based usage of location information history reporting from the location management client to the location management server.

Pre-conditions:

1. The location management client configured to store location information, while not reporting location information to the location management server.

2. The location management client has stored location information based on triggering criteria in not reporting location information cases.



Figure 10.9.3.9.2.1-1: On-demand based usage of report location history procedure (LMC – LMS)

1. The location management client returns to report location information to the location management server.

2. Location management server requests the stored location information.

NOTE 1: The location management client may provide the status of the stored location information prior to the request from location management server.

3. The location management client responds to the location management server with one or several stored location information history reports.

NOTE 2: The transmission of requested stored location information does not interrupt the reporting of location information.

NOTE 3: The most recent stored location information that qualifies for transmission is transmitted first.

NOTE 4: The transmission may be stopped at any time with the cancel location history reporting procedure, as described in clause 10.9.3.9.4.

4. The location management server updates the available location information with one or several stored location information from the location management client.

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

###### 10.9.3.9.2.2 On-demand report location history procedure

The location management server can request stored location information at any time from the location management client, following a return to report location information to the location management server. The MC service server or the location management client may initiate the request of stored location information.

Figure 10.9.3.9.2.2-1 illustrates the procedure for the on-demand based usage of location history reporting.

Pre-conditions:

1. The location management client 1 configured to store location information, while not reporting location information to the location management server.

2. The location management client 1 has stored location information based on triggering criteria in not reporting location information cases.

3. The location management server may have none, a subset or all available stored location information reports from location management client 1.



Figure 10.9.3.9.2.2-1: On-demand based usage of report location history procedure

1. The MC service server or the location management client 2 initiate the location information history request to the location management server.

NOTE: The MC service server or the location management client 2 may request the status on stored location information from location management client 1, prior to the location information history request.

2. The location management server checks the authorization of this request and compares the location information history request with the already retrieved stored location information from location management client 1.

3. The location management server requests stored location information from location management client 1, if the desired stored location information not available on the location management server.

4. The location management server reports the requested stored location information to the MC service server or location management client 2.

\* \* \* End of Change \* \* \* \*