**3GPP TSG-SA WG6 Meeting #37-e S6-200645**

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

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0212** | **rev** |  | **Current version:** | **17.2.1** |  |
|  | | | | | | | | |
| *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:*** | Add the network Notification Server | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | at&t | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eMCData3 | | | | |  | ***Date:*** | | | 2020-04-29 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Notification function is needed for MCData message store to inform a MCData UE that there are changes in its account. A centralized network base notification function is more efficient and could potentially used by other MC services. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Add the new standalone Notification Server to the common MCData network architecture that will provide web based notification service. 2. Add two new reference points for the Notification server. 3. Add new information flows and procedure for the new reference points. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | There will be no clear stage 3 guidance to develop the web based notification mechanism. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.4.1, 6.4.3.X (new), 6.4.3.Y (new), 6.4.4.1.6, 6.4.4.1.X (new), 6.4.4.1.Y (new), 7.13.3.1.AA (new), 7.13.3.1.BB (new), 7.13.3.1.CC (new), 7.13.3.1.DD (new), 7.13.3.1.EE (new), 7.13.3.17.2, 7.13.3.17.3 (new), Table A.5-2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

## 6.4 Generic functional model

### 6.4.1 On-network functional model

Figure 6.4.1-1 shows the generic application plane functional model.



Figure 6.4.1-1: Generic application plane functional model

In the model shown in figure 6.4.1-1, capability functions (SDS, FD, DS, IPcon) of the MCData client and the MCData server along with their reference points (MCData-cap-1 to MCData-cap-n) are described in the respective functional models for each capability.

NOTE: The security aspects of new network components (MCData message store,Message store client and Notification server) and the associated new reference points are the responsibility of SA3 and thus outside the scope of the present document.

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

#### 6.4.3.X MCData Notification server

The Notification server provides the centralized notification function in the network. The Notification server allows an application (e.g. resident in the UE) to create a communication channel to receive real-time notifications from the network in either Pull or Push mode. Depending on the channel type created, the Notification server provides the application a callback endpoint (i.e. URL) and may also provide a channel endpoint (i.e. URL). The application communicates the callback endpoint information to the application server (i.e. network enabler) for it to use in sending to the Notification server the events for delivery to the application. Depending on the type of channel created by the application the delivery of the notifications from the Notification server to the application may be via a Pull or Push method. If Pull method is used, then the application shall use the provided channel endpoint to pull the notifications from the Notification server. However, if a Push notification delivery is used, then the Notification server asynchronouly delivers the events received from the application server to the application through a PUSH Enabler server. The Notification server provides a consistent way to deliver notifications by all services to reduce the complexity of service logic on the application server.

#### 6.4.3.Y Message notification client

The Message notification client is used to request the notification service from the MCData Notification server. Once the notification service request is authorization by the MCData Notification server the Message notification client will communicate the callback channel from the MCData Notification server to the MCData message store to be used for notification message delivery. In a PUSH mode the Message notification client receives the notification message through a PUSH enabler in the network while in the PULL mode the Message notification client uses the notification channel from the MCData Notification server to retrieve the notification message from the MCData Notification server.

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

##### 6.4.4.1.6 Reference point MCData-7 (between the Message store client and MCData message store)

The MCData-7 reference point, which exists between the Message store client and the MCData message store, is used by the Message store client to manage the information stored in the MCData message store, to subscribe to changes in the MCData message store and to synchronize between the MCData client and the MCData message store.

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

##### 6.4.4.1.X Reference point MCData-10 (between the Message notification client and MCData Notification server)

The MCData-10 reference point, which exists between the Message notification client and the MCData Notification server, is used by the Message notification client to create an appropriate notification channel(s) at the MCData Notification server in order to direct events from MCData message store to the MCData Notification server for subsequent delivery to the Message notification client on the UE.

##### 6.4.4.1.Y Reference point MCData-11 (between the MCData message store and the MCData Notification server)

The MCData-11 reference point, which exists between the MCData message store and the MCData Notification server, is used by the MCData message store to send notification message to the subscribed Message notification client.

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

##### 7.13.3.1.AA Create notification channel request

Table 7.13.3.1.AA-1 describes the information flow for the Create notification channel request sent from the Message notification client to the MCData Notification server.

Table 7.13.3.1.AA-1: Create notification channel request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData client initiating the request |
| Validity duration | M | How long the notification channel is intended to be used |
| Channel Type | O | Indicates if PULL (e.g. long-polling method) or PUSH method will be used to deliver notification messages |

##### 7.13.3.1.BB Create notification channel response

Table 7.13.3.1.BB-1 describes the information flow for the Create notification channel response sent from the MCData Notification server to the Message notification client.

Table 7.13.3.1.BB-1: Create notification channel response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData client initiating the request |
| Validity duration | M | How long the notification channel will last |
| Notification URL | O | The URL to receive the notification message if a Pull method is requested |
| Callback URL | M | The URL for MCData message store to send the notification message |

##### 7.13.3.1.CC Open notification channel

Table 7.13.3.1.CC-1 describes the information flow for the Open notification channel sent from the Message notification client to the MCData Notification server.

Table 7.13.3.1.CC-1: Create notification channel request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData client initiating the request |
| Notification URL | M | The URL to receive the notification message |
| Validity duration | M | How long the notification channel will be valid |

##### 7.13.3.1.DD Subscribe for notification request

Table 7.13.3.1.DD-1 describes the information flow for the Subscribe for notification request sent from the Message notification client to the MCData message store.

Table 7.13.3.1.DD-1: Subscribe for notification request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData client initiating the request |
| Callback URL | M | The URL where to send the notification message |

##### 7.13.3.1.EE Subscribe for notification response

Table 7.13.3.1.EE-1 describes the information flow for the Subscribe for notification response sent from the the MCData message store to the Message notification client.

Table 7.13.3.1.EE-1: Subscribe for notification response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData client initiating the request |
| Result | M | Indicates if the subscription is success or failure |

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

#### 7.13.3.17 Notify client to synchronize

##### 7.13.3.17.1 General

MCData message store will send a notification to the MCData user when there are new objects in the MCData message store that need to be synchronized with his local message store.

##### 7.13.3.17.2 Procedure using in-band connection

The procedure in figure 7.13.3.17.2-1 describes how the MCData message store notifies the message store client that there are new objects in the MCData message store need to be synchronized.

Pre-conditions:

1. The MCData user has an account with the MCData message store.

2. A successful authentication and authorization have been performed between the message store client and the MCData message store.

3. The Message store client is in an ongoing session with the MCData message store.



Figure 7.13.3.17.2-1: Notify client to synchronize using in-band connection

1. The MCData message store receives new objects for the MCData user and decides to send a notification to inform the MCData user.

NOTE: How MCData message store determines if a notification needs to be sent to the message store client is out of scope of the present specification.

2. The MCData message store sends the MCData synchronization notification to the message store client.

##### 7.13.3.17.3 Procedure using MCData Notification server

The procedure in figure 7.13.3.17.3-1 describes how the MCData message store notifies the message notification client, using a Notification server, that there are new objects in the MCData message store needing to be synchronized. This procedure uses a web base notification mechanism in wide deployment today. The Message notification client requests the notification service from the MCData Notification server and the MCData Notification server returns with two URLs; one used by the service client to inform the service server to use to send notification messages and the other one to used by the service client to PULL notification messages from the Notification server.

Pre-conditions:

1. The MCData user has an account with the MCData message store.

2. A successful authentication and authorization have been performed between the message store client and the MCData message store.

3. The Message store client doesn’t have an ongoing session with the MCData message store.

4. The trust relationship between the Notification server and the MCData message store has been established.

5. The Notification server has a trust relationship and connection with the PUSH Enabler server.



Figure 7.13.3.17.3-1: Notify client to synchronize thru MCData Notification server

1. The Message notification client wants to create notification channels (i.e. endpoint URLs) to be used by the MCData message store to send notification messages and sends a Create notification channel request to the MCData Notification server. The desired validity period for the channels to be used and the notification channel type (PUSH or PULL) are included in the request.
2. The MCData Notification server authenticates the Message notification client and authorizes its request.
3. The MCData Notification server sends the Message notification client the Create notification channel response with the endpoint URLs that will be used by the MCData message store to send the notification messages and the Message notification client to receive the notification messages. The MCData Notification server also includes what is the valid period for these endpoint URLs to be used in the response.
4. If the notification type is PULL method, the Message notification client sends the Open notification channel to the MCData Notification server to start receiving the notification message.
5. The Message notification client sends the Subscriber for notification request to the MCData message store asking to be notified if there are changes to its message store account. The callback URL returned from the MCData Notification server in step 3 is included in the request for the MCData message store to use to send notification messages.
6. The MCData message store sends the Subscriber for notification response to the Message notification client to acknowledge the request.
7. The MCData user’s message store account has changed and the MCData message store generates a notification message.
8. Using the callback URL, the MCData message store sends the notification message to the MCData Notification server.
9. If the delivery method is PULL, the MCData Notification server sends the notification message to the Message notification client over the opened notification channel. If the delivery method is PUSH, the MCData Notification server sends the notification message to the PUSH Enabler server (not shown in the figure) to deliver to the Message notification client.

NOTE: The PUSH Enabler server is implementation specific and outside the scope of this specification.

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

Table A.5-2: MCData service configuration data (on network)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reference | Parameter description | MCData UE | MCData Server | Configuration management server |
| Subclause 6.2.2 of 3GPP TS 22.282 [3] | Transmission and reception control |  |  |  |
|  | > Maximum data size for SDS | Y | Y | Y |
|  | > Maximum payload data size for SDS over signalling control plane (see NOTE 1) | Y | Y | Y |
|  | > Maximum data size for FD | Y | Y | Y |
|  | > Maximum data size for auto-receive | N | Y | Y |
|  | List of functional alias identities |  |  |  |
| [R-5.9a-005] of 3GPP TS 22.280 [17] | > Functional alias | N | Y | Y |
| [R-5.9a-005] of 3GPP TS 22.280 [17] | >> Limit number of simultaneous activations | N | Y | Y |
| [R-5.9a-005] of 3GPP TS 22.280 [17] | >> This functional alias can be taken over | N | Y | Y |
|  | >> List of users who can activate this functional alias |  |  |  |
| [R-5.9a-005] of 3GPP TS 22.280 [17] | >>> MCData ID | N | Y | Y |
| [R-5.9a-016] of 3GPP TS 22.280 [17] | >> Communication priority (see NOTE 2) | N | Y | Y |
| [R-5.10-001a] of 3GPP TS 22.280 [2] | Maximum number of successful simultaneous service authorizations of clients from a user | N | Y | Y |
|  | MCData Notification server |  |  |  |
|  | > Server URI | Y | Y | Y |
| NOTE 1: The maximum payload data size for SDS over signalling control plane shall be less than or equal to the maximum data size for SDS.  NOTE 2: The usage of this parameter by the MCData server is up to implementation. | | | | |