**3GPP TSG-SA WG6 Meeting #60 S6-24xxxx**

**Changsha, Hunan, China 15th – 19th April 2024 (revision of S6-24xxxx)**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  |  | **CR** | **<CR#>** | **rev** |  | **Current version:** | **19.2.0** |  |
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| *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:***  | MC gateway authentication and authorization |
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| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | SA6 |
|  |  |
| ***Work item code:*** | MCGWUE |  | ***Date:*** | 2024-04-09 |
|  |  |  |  |  |
| ***Category:*** | A |  | ***Release:*** | Rel-19 |
|  | *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 canbe 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:*** | SA3 has discussed the connection authorization procedures specified in clause 11.5.1.2.3 and clause 11.5.1.3.3 of TS 23.280 on and provided the following feedback (see LS reply in S6-240551):- Any MC related identities SHALL only be provided by the Identity Management Server according to TS 33.180.- The connection (and related security) between the non-3GPP device and the MCGWUE is out of scope of 3GPP.- Guidance on MC Gateway UE authentication, non-3GPP device authentication and MC service authorisation can be found in CR0210 against TS 33.180 (S3-240861).- The authentication of the MCGWUE to the 3GPP network shall follow TS 33.501 or TS 33.401. - MC Client authentication and authorization shall follow TS 33.180 (whether allow to access the MC service regardless of whether the client is located in the MCGWUE or in the non-3GPP device). |
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| ***Summary of change:*** | The MC server is no longer involved in the connection authorization and disconnection mechanisms, only the MC gateway client and the MC gateway UE are involved. The MC gateway UE checks whether the provided MC GW service ID allows to have access. |
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| ***Consequences if not approved:*** | Unclear requirements/guidance for stage 3 specifications and misalignment with TS 33.180. |
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| ***Clauses affected:*** | 11.2.1, 11.2.2, 11.5.1, 11.5.4 |
|  |  |
|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* Start of changes \* \* \* \*

11.2.1 Functional model

For the application-level signalling necessary for the association between the MC client on the non-3GPP device and the MC gateway UE reference point Gateway-local (GW-local) is used. The MC gateway UE uses the Gateway-Core (GW-Core) reference point towards the MC service server to announce the association between MC gateway client and MC gateway UE server. Once the user of the MC gateway UE has been authenticated and authorized by the corresponding MC service server, the MC service user is authorized MC gateway user.

The MC gateway UE server enables the following functions:

- Authentication of the MC gateway clients including the MC gateway UE function of the corresponding MC service server

- The following functions are available when the connection authorization of the MC gateway client is successful:

- Relay of signalling between MC client and MC service server/CSC server

- Relay of signaling between the signaling user agent residing on the non-3GPP device and the SIP core

- Relay of signaling between the HTTP client residing on the non-3GPP device and the HTTP proxy

- Media plane forwarding between the MC service server and the MC clients

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**Figure 11.2.1-1: Functional model of MC gateway UE signalling plane**

\* \* \* \* Next change \* \* \* \*

11.2.2 Reference points

11.2.2.1 General

The reference points for the use of the MC gateway UE are described in the following subclauses.

11.2.2.2 Reference point GW-local (between the MC gateway client and the MC gateway UE server)

The GW-local reference point between the MC gateway client and the MC gateway UE server in the MC gateway UE is used:

- To authorize the use of the MC gateway UE,

- To manage (request/release) forwarding of the signalling, media from the MC gateway UE to the MC gateway client and its associated MC clients for unicast, multicast/broadcast communication using corresponding identifiers, e.g., TMGI,

- To disconnect from the use of the MC gateway UE.

- To notify about the connection status.

The GW-local reference point is based on HTTP-1 reference point.

11.2.2.3 Reference point GW-Core (between the MC gateway UE server and the MC service server)

The GW-Core reference point between the MC gateway UE server in the MC gateway UE and the MC service server shall be used:

- To manage (request/release) transport resources between the MC gateway UE and the MC service server signalling purposes are associated with the MC clients residing on a non-3GPP device,

- To disconnect from the use of the MC gateway UE.

NOTE 1: Signalling of the MC clients utilizes the allocated resources (default bearer for EPS or corresponding QoS flow in 5GS) and if necessary, MC gateway UE may request additional resources.

NOTE 2: The authorized use of necessary connectivity between the non-3GPP device and the MC gateway UE is outside 3GPP specification.

The GW-Core reference point is based on HTTP-1 reference point as shown in figure 7.3.1-2.

\* \* \* \* Next change \* \* \* \*

11.5.1 Connection authorisation mechanisms

11.5.1.1 General

The connection of non-3GPP devices, which can host MC service clients, require connection authorisation verification by the MC gateway UE. For non-3GPP devices, which cannot host MC service clients, the connection authorization verification is out of scope of 3GPP.

11.5.1.2 Connection authorisation for non-3GPP devices that host an MC client

11.5.1.2.1 General

The solution is applied to non-3GPP devices which can host an MC client. The MC server performs authorization for the use of the MC gateway UE by the MC gateway client, i.e. the binding between the MC gateway UE and the MC gateway client is authorized and controlled by the MC server. The MC gateway client informs MC clients about the connection status.

For the period of association between MC server, MC gateway client and MC gateway UE, the MC server maintains the assignment between MC clients to the MC gateway UE used. This assignment is cancelled again with the disconnection.

11.5.1.2.2 Information flows

11.5.1.2.2.1 Connection authorization request

Table 11.5.1.2.2.1-1 describes the information flow connection authorization request sent from the MC gateway client, which resides on a non-3GPP device, to the MC gateway UE.

**Table 11.5.1.2.2.1-1: Connection authorization request**

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| **Information element** | **Status** | **Description** |
| GW MC service ID | M | The GW MC service ID of the requesting MC service user. |
| NOTE: The GW MC service ID indicates for which MC service the connection is to be authorised. |

NOTE: The MC service ID used for MC service authorisation and the GW MC service ID used for connection authorization may have different values. Both identities are configured by the Mission Critical Organisation.

11.5.1.2.2.2 Connection authorization response

Table 11.5.1.2.2.2-1 describes the information flow connection authorization response sent from the MC gateway UE to the MC gateway client residing on a non-3GPP device.

**Table 11.5.1.2.2.2-1: Connection authorization response**

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| **Information element** | **Status** | **Description** |
| GW MC service ID | M | The GW MC service ID of the requesting MC service user. |
| Response | M | Result of the connection authorization request, service feasibility, and connection evaluation. |

11.5.1.2.3 Connection authorisation procedure

The procedure for connection authorisation with an MC gateway UE is shown in figure 11.5.1.2.3-1.

Pre-conditions

- The MC service user wishes to have access to MC services using a non-3GPP device.

- The MC gateway client has been configured with the necessary parameters needed for connectivity with the MC gateway UE.

- The MC gateway client hosted at the non-3GPP device has been provided with an appropriate GW MC service ID.

- The MC gateway UE has performed service authorization for one or more MC services with the MC system as described in 3GPP TS 23.379 [16], 3GPP TS 23.281 [12], and 3GPP TS 23.282 [13].

- The MC gateway client has selected an MC gateway UE or alternatively, the MC gateway client has performed a selection by internal criteria.

NOTE: The internal criteria are outside the scope of the present document.

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**Figure 11.5.1.2.3-1: Connection authorisation with an MC gateway UE**

1. The MC gateway client requests connection authorization with the MC gateway UE. The MC gateway client provides the GW MC service ID.

2. The MC gateway UE checks whether the provided GW MC service ID allows to use this MC gateway UE to access the MC system. The MC gateway UE may also check whether sufficient resources are available or if any other local criteria are met.

NOTE: Further information to the MC gateway UE selection is in Annex D.

3. The MC gateway UE sends the connection authorization response, containing the result of the connection authorization check, back to the MC gateway client.

After successful connection with the MC gateway UE, the MC clients have access to the MC server and may continue with user authentication and service authorization.

If the MC service user wishes to have access to another MC service, the above procedure is repeated. The MC service user may select a different MC gateway UE for the new MC service, if multiple MC gateway UEs are available.

11.5.1.3 Void

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11.5.4 Disconnection mechanism

11.5.4.1 General

A connection using an MC gateway UE by the corresponding MC gateway client can be cancelled over time or re-established using same or another MC gateway UE. The connection/disconnection mechanism allows the MC gateway client to disconnect the use of the corresponding MC gateway UE considering the various MC client hosting scenarios.

Under certain circumstances, the connection with the corresponding MC gateway UE can change or has to be adjusted. The various reasons are detailed in the informative Annex D. For this purpose, the MC gateway UE can send a notification to the corresponding MC gateway client hosted on a non-3GPP device.

The disconnection is only applied to non-3GPP devices which can host an MC client.

11.5.4.2 Disconnection for non-3GPP devices that host an MC client

11.5.4.2.1 General

The clause is applied to non-3GPP devices which can host an MC client.

11.5.4.2.2 Information flows

11.5.4.2.2.1 Disconnection request

Table 11.5.4.2.2.1-1 describes the information flow disconnection request sent from the MC client, which resides on a non-3GPP device, to the MC gateway UE.

**Table 11.5.4.2.2.1-1: Disconnection request**

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| **Information element** | **Status** | **Description** |
| GW MC service ID | M | The GW MC service ID of the requesting MC service user. |

11.5.4.2.2.2 Disconnection response

Table 11.5.4.2.2.2-1 describes the information flow disconnection response sent from the MC gateway UE to the MC client residing on a non-3GPP device.

**Table 11.5.1.2.2.2-1: Disconnection response**

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| **Information element** | **Status** | **Description** |
| GW MC service ID | M | The GW MC service ID of the requesting MC service user. |
| Response | M | Result of the disconnection request. |

11.5.4.2.2.3 Connection status notification

Table 11.5.4.2.2.3-1 describes the information flow connection status notification sent from the MC gateway UE to the MC client, which resides on a non-3GPP device.

**Table 11.5.4.2.2.3-1: Connection status notification**

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| **Information element** | **Status** | **Description** |
| GW MC service ID | M | The GW MC service ID of the associated MC client. (see NOTE 1) |
| Status information | M | This information element provides connection status. (see NOTE 2). |
| NOTE 1: The GW MC service ID indicates for which MC service the connection is to be disconnected.NOTE 2: Information about the connection status are further detailed in Annex D.  |

11.5.4.2.3 Disconnection procedure

The procedure for disconnection via an MC gateway UE towards an MC server is shown in figure 11.5.4.2.3-1.

Pre-conditions

- The MC service user has an authorized connection via an MC gateway UE to an MC server.

- The MC clients have no communication ongoing, e.g. group communication.

- The MC gateway client service user on a non-3GPP device wishes to disconnect the authorized connection.

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**Figure 11.5.4.2.3-1: Disconnection with an MC gateway UE**

1. The MC gateway client requests disconnection with an MC gateway UE. The MC gateway client of the MC service user provides the GW MC service ID.

2. The MC gateway UE updates MC gateway client connection status as disconnected.

3. The MC gateway UE sends the disconnection response to the MC gateway client.

11.5.4.2.4 Connection status notification

The procedure for connection status notification initiated by an MC gateway UE towards an MC gateway client is shown in figure 11.5.4.2.4-1 informs about the status of connection status that may result into a disconnection.

Pre-conditions

- The MC gateway client has an authorized connection via an MC gateway UE to an MC server.

- The MC gateway UE is no longer able to provide the requested service depending on reasons further detailed in Annex D.

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**Figure 11.5.4.2.4-1: Connection status notification to an authorized MC gateway client**

1. The MC gateway UE wants to disconnect the connection with an MC server for the corresponding MC gateway client. The MC gateway UE sends connection status notification to the MC gateway client using the corresponding GW MC gateway ID.

2. The connection status may result that the MC gateway client wants to disconnect the connection with the MC server (see disconnection in clause 11.5.4.2.3).

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\* \* \* \* End of changes \* \* \* \*