**3GPP TSG-SA WG6 Meeting #35 S6-200281**

**Hyderabad, India, 13th - 17th Jan 2020 (revision of S6-200189, S6-200065)**

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| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **23.282** | **CR** | **0199** | **rev** | **2** | **Current version:** |  |  |
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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:***  | Corrections and enhancements to IP Connectivity |
|  |  |
| ***Source to WG:*** | AT&T |
| ***Source to TSG:*** | S6 |
|  |  |
| ***Work item code:*** | eMCData3 |  | ***Date:*** | 2020-01-03 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***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 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | To fix some of the misalignments of message names used in the informational flow with clear definitions and other enhancements/clarifications to avoid potential errors. |
|  |  |
| ***Summary of change:*** | 1. Align/correct all message names with the procedures used.
2. Add new information elements that are needed for the procedures.
3. Remove information elements that are not needed for the procedures.
4. Enhance and correct text in procedures for clarity.
 |
|  |  |
| ***Consequences if not approved:*** | The stage 3 development might be wrong. |
|  |  |
| ***Clauses affected:*** | 7.14.2, 7.14.2.1, 7.14.2.1.1, 7.14.2.1.2, 7.14.2.1.3, 7.14.2.1.4, 7.14.2.1.5, 7.14.2.1.6, 7.14.2.1.7, 7.14.2.1.8, 7.14.2.2, 7.14.2.2.1, 7.14.2.2.2, 7.14.2.3, 7.14.2.3,1, 7.14.2.3.2, 7.14.2.4, 7.14.2.4.1, 7.14.2.4.2, 7.14.2.5, 7.14.2.5.1, 7.14.2.5.2, 7.14.2.6, 7.14.2..6.1, 7.14.2..6.2 |
|  |  |
|  | **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:*** |  |

7.14.2 IP connectivity for on-network

7.14.2.1 Information flows for IP connectivity

7.14.2.1.1 MCData IPcon point-to-point request

Table 7.14.2.1.1-1 describes the information flow of the MCData IPcon point-to-point request sent from the MCData client to the MCData server.

**Table 7.14.2.1.1-1: MCData IPcon point-to-point request (MCData client to MCData server)**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID | M | The MCData identity of the originator MCData user; |
| Functional alias | O | The associated functional alias of the originator MCData user; |
| MCData ID | O(NOTE 2) | The MCData identity of the target MCData client IP connectivity is requested. |
| Functional alias | O(NOTE 2) | The functional alias of the target MCData client. |
| Requested Priority(NOTE 3) | O | Application priority level requested for this communication. |
| Location Information | O(NOTE 1) | Actual location information of the originating MCData user; |
| Time Limit | O | Proposed time limit of the requested IP connectivity (1min- infinite); |
| Establishment reason | O | IP connectivity establishment reason |
| NOTE 1: This information contains the latest available location information of the requesting MCData user that may be different to the latest available location information in the MC system.NOTE 2: Either the MCData ID or the functional alias of the target MCData user must be present.NOTE 3: The predefined priority of the MC service user is applied by the MCData server if the requested priority is not present or not accepted by the MCData server. |

**Table 7.14.2.1.1-2: MCData IPcon point-to-point request (MCData server to MCData client)**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID | M | The MCData identity of the originator MCData user; |
| MCData ID | M | The MCData identity of the target MCData client IP connectivity is requested. |
| Location Information | O(NOTE 1) | Actual location information of the originating MCData user; |
| Time Limit | O | Proposed time limit of the requested IP connectivity (1min- infinite); |
| Establishment reason | O | IP connectivity establishment reason |
| NOTE 1: This information contains the latest available location information of the requesting MCData user. |

7.14.2.1.2 MCData IPcon point-to-point response

Table 7.14.2.1.2-1 describes the information content of the MCData IPcon point-to-point response as answer to MCData IPcon point-to-point request.

**Table 7.14.2.1.2-1: MCData IPcon point-to-point response**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID | M | The MCData identity of the targeted MCData user. |
| MCData ID | M | The MCData identity of the requesting MCData user. |
| Time Limit | O | Negotiated time (1 min – infinite) |
| IP connectivity status | M | IP connectivity establishment result |

7.14.2.1.3 MCData remote IPcon point-to-point request

Table 7.14.2.1.3-1 describes the information flow of the MCData remote IPcon point-to-point request sent from the remote MCData client to the MCData server and from the MCData server to the asked MCData client.

**Table 7.14.2.1.3-1: MCData remote IPcon point-to-point request**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID remote | M | The MCData identity of the remote MCData client that requests another MCData user to establish an IP connectivity point-to-point session. |
| Functional alias remote | O | The associated functional alias of the remote MCData user. |
| MCData ID asked | M | The MCData identity of the MCData client that is required to establish an IP connectivity point-to-point session. |
| Functional alias asked | O | The functional alias associated with the MCData identity of the MCData client that is required to establish an IP connectivity point-to-point session. |
| MCData ID targeted (NOTE 1) | O | The MCData identity of the MCData client that is the target of the requested IP connectivity point-to-point session. |
| Functional alias targeted (NOTE 1) | O | The functional alias associated with the MC MCData identity of the MCData client that is the target of the requested IP connectivity point-to-point session. |
| Requested Priority(NOTE 2) | O | Application priority level requested for this call. |
| Time Limit | O | Proposed time limit of the requested IP connectivity (1min- infinite). |
| Establishment reason | O | IP connectivity establishment reason |
| NOTE 1: Either the MCData ID or the functional alias of the targeted MCData user must be present.NOTE 2: The predefined priority of the MC service user is applied by the MCData server if the requested priority is not present or not accepted by the MCData server. |

7.14.2.1.4 MCData remote IPcon point-to-point response

Table 7.14.2.1.4-1 describes the information content of the MCData remote IPcon point-to-point response as answer to MCData remote IPcon point-to-point request.

**Table 7.14.2.1.4-1: MCData remote IPcon point-to-point response**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID asked | M | The MCData identity of the asked MCData client in the request message; |
| MCData ID targeted | M | The MCData identity of the targeted MCData client in the request message; |
| IP connectivity status | M | The status information about the IP connectivity session to the remote MCData user. |

7.14.2.1.5 MCData remote IPcon point-to-point tear down request

Table 7.14.2.1.5-1 describes the information flow of the MCData remote IPcon point-to-point tear down request sent from the remote MCData client to the MCData server and from the MCData server to the asked MCData client.

**Table 7.14.2.1.5-1: MCData remote IPcon point-to-point tear down request**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID remote | M | The MCData identity of the remote MCData client that requests another MCData user to tear down an IP connectivity point-to-point session. |
| Functional alias remote | O | The associated functional alias of the remote MCData user; |
| MCData ID asked | M | The MCData identity of the MCData client that is asked to tear down an IP connectivity point-to-point session. |
|  |  |  |
| MCData ID targeted  | M | The MCData identity of the MCData client that is the target to be tear down from the IP connectivity point-to-point session. |
|  |  |  |
|  |

7.14.2.1.6 MCData remote IPcon point-to-point tear down response

Table 7.14.2.1.6-1 describes the information content of the MCData remote IPcon point-to-point tear down response as answer to MCData remote IPcon point-to-point tear down request.

**Table 7.14.2.1.6-1: MCData remote IPcon point-to-point tear down response**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID asked | M | The MCData identity of the asked MCData client in the request message. |
| MCData ID targeted | M | The MCData identity of the targeted MCData client in the request message. |
| Tear down status | M | The status information about the IP connectivity tear down status information |

7.14.2.1.7 MCData remote IPcon point-to-point application priority change request

Table 7.14.2.1.7-1 describes the information flow of the MCData remote IPcon point-to-point application priority change request sent from the remote MCData client to the MCData server and from the MCData server to the asked MCData client.

**Table 7.14.2.1.7-1: MCData remote IPcon point-to-point application priority change request**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID remote | M | The MCData identity of the remote MCData client that requests to change the application priority of an IP connectivity point-to-point session. |
| Functional alias remote | O | The associated functional alias of the remote MCData user; |
| MCData ID  | M | The first MCData identity of the MCData client that is involved in the IP connectivity point-to-point session. |
|  |  |  |
| MCData ID  | M | The second MCData identity of the MCData client that is involved in the IP connectivity point-to-point session. |
|  |  |  |
| Requested Priority | M | Contains the required application priority for the IP data communication between both MCData clients. |
|  |

7.14.2.1.8 MCData remote IPcon point-to-point application priority change response

Table 7.14.2.1.8-1 describes the information content of the MCData remote IPcon point-to-point application priority change response as answer to MCData remote IPcon point-to-point application priority change request.

**Table 7.14.2.1.8-1: MCData remote IPcon point-to-point application priority change response**

|  |  |  |
| --- | --- | --- |
| **Information element** | **Status** | **Description** |
| MCData ID | M | The MCData identity of the first MCData client involved in the IP connectivity point-to-point session. |
| MCData ID | M | The MCData identity of the second MCData client involved in the IP connectivity point-to-point session |
| Requested priority change status | M | The status information about the application priority of the addressed IP connectivity session. |

7.14.2.2 IP connectivity point-to-point MCData transport service

7.14.2.2.1 General

IP connectivity service capabilities enables MCData unaware data hosts to use usual MCData service capabilities, e.g. data communication between them. This subsection describes the establishment of a point-to-point connection between two IP connectivity clients using the media plane for IP Data transmission. The target MCData user may be addressed using the functional alias that can be shared by multiple MCData users.

In order not to violate the point-to-point principle when a functional alias is shared, only two MCData user can participate to a point-to-point IP connectivity session. The MCData server resolves the associated MCData user of the functional alias and checks the list of the associated MCData users from top to bottom about its support of IP connectivity capabilities. If the MCData user supports IP connectivity capabilities, the connection to this MCData user will be established. If this connection request is rejected, the next available MCData user from the list will be addressed. This process is continued until either the first successful IP connectivity is established or all associated MCData users have been addressed. If the point-to-point IP connectivity to a destination MCData user on the list cannot be established, the initiating MCData user will be informed accordingly.

7.14.2.2.2 Procedure

The procedure in figure 7.14.2.2.2-1 describes the case where an IP connectivity capable MCData client is initiating a point-to-point IP connectivity with another IP connectivity capable MCData client.

Pre-conditions:

- The total data volume limit, e.g. daily time limit or total data volume per day does not restrict the establishment of an IP connectivity IP data exchange.

- MCData clients are linked with individual data hosts.

- MCData clients belong to the same MCData system.

- The data hosts linked with the MCData clients already have an IP address allocated.

- MCData clients have IP connectivity capabilities.

- The linked data hosts are authorized to use the MCData clients to establish an IP connectivity.

NOTE: How the data host is authorized to use the MCData client is out of the scope of the present document.

- The MCData server has subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

- MCData client 1 understands the correspondence between the IP addresses of target data hosts and MCData client 2. How this relationship is determined is out of scope of the present document.

- Optionally, the MCData clients may have activated a functional alias to be used.

**Figure 7.14.2.2.2-1: Establishment of a point-to-point IP connectivity**

1. MCData client 1 has IP Data to send to MCData client 2 and initiates an IP connectivity point-to-point request.

2. MCData client 1 sends a MCData IPcon point-to-point request towards the MCData server. The MCData IPcon point-to-point request contains either the MCData ID of MCData client 2 or its associated functional alias. MCData user at MCData client 1 may include its associated functional alias.

3. MCData server checks whether MCData user at MCData client 1 is authorized to send an MCData IPcon point-to-point request and checks if MCData client 2 is authorised to receive the IP connectivity service. If a functional alias is used to address the target MCData user, the MCData server resolves the MCData IDs of the functional alias. The resulting list contains all associated MCData IDs/MCData users that share this functional alias. The MCData server now checks which MCData users have IP connectivity capabilities and which are authorized to receive IP connectivity services. The MCData server allows only two participating MCData clients for a point-to-point IP connectivity. To integrate a possible MCData user from the list to the point-to-point IP connectivity, the MCData server works the list of the MCData user from top to bottom until one of the corresponding MCData users from the list accepts the IP connectivity session. If no associated MCData user supports and authorized to establish an IP connectivity; the MCData server returns an error back to MCData client 1.

4. MCData server initiates the MCData IPcon point-to-point request towards the determined MCData client 2.

NOTE: MCData client 2 corresponds to the MCData user(s) after resolution of the functional alias.

5. MCData client 2 sends a MCData IPcon point-to-point response to the MCData server that contains the information if the request is accepted or the reason of rejection. If accepted, the MCData client 2 may include the data transmission time limit.

6. MCData server forwards the MCData IPcon point-to-point response of MCData client 2 to MCData client 1.

7. The MCData server applies transmission and reception control and the necessary policy to ensure that appropriate data is transmitted between the MCData clients.

8. MCData client 1 and MCData Client 2 have successfully established media plane for data communication and MCData client 1 and MCData client 2 exchange IP Data.

7.14.2.3 Remote initiated point-to-point IP connectivity

7.14.2.3.1 General

The MCData service shall support mechanisms that allow an authorized MCData user to trigger remotely the establishment of a point-to-point IP connectivity service. This encompasses the procedure of a remote MCData user that addresses the establishment of an IP connectivity between the requested MCData client and the destination MCData client.

7.14.2.3.2 Procedure

The procedure in figure 7.14.2.3.2-1 describes the case where an authorised MCData user triggers remotely the establishment of a point-to-point IP connectivity connection between two other MCData users, required MCData user that establish IP connectivity session to the targeted MCData user.

Pre-conditions:

- The MCData clients are linked with individual data hosts.

- MCData clients belong to the same MCData system.

- The data hosts linked with the MCData clients already have an IP address allocated.

- MCData clients have IP connectivity capabilities.

- The linked data hosts are authorized to use the MCData clients to establish an IP connectivity.

NOTE: How the data host is authorized to use the MCData client is out of the scope of the present document.

- The MCData server has subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

- MCData clients understands the correspondence between the IP addresses of target data hosts and MCData client 3. How this relationship is determined is out of scope of the present document.

- Optionally, the MCData clients may have activated a functional alias to be used.

- MCData client 1 is authorized to establish remote initiated point-to-point IP connectivity sessions.



**Figure 7.14.2.3.2-1: Establishment of a remote point-to-point IP connectivity**

1. MCData client 1 would like to establish a remote point-to-point IP connectivity to allow IP Data exchange between two other MCData clients, the asked MCData client 2 and the targeted MCData client 3.

2. The MCData client 1 sends a MCData remote IPcon point-to-point request towards the MCData server. The MCData IPcon point-to-point request contains the MCData ID and optionally the corresponding functional aliases of MCData client 2 and either the MCData ID or the functional alias of MCData client 3. MCData user at MCData client 1 may include its associated functional alias.

3. MCData server checks whether MCData user at MCData client 1 is authorized to send a remote MCData IPcon point-to-point request and if MCData client 2 and 3 are authorized to receive the IP connectivity service.

4. MCData server sends the MCData remote IPcon point-to-point request towards the MCData client 2.

5. MCData client 2 considers the provided targeted MCData ID or targeted functional alias to establish the point-to-point IP connectivity to MCData client 3 according to clause 7.14.2.2. The IP connectivity status shall be forwarded by MCData client 2 to MCData client 1.

6. MCData client 2 send a MCData remote IPcon point-to-point response to the MCData server encompassing the IP connectivity status of the point-to-point IP connectivity session between MCData client 2 and MCData client 3.

7. The MCData server forwards the MCData remote IPcon point-to-point response to the remote MCData client 1.

7.14.2.4 MCData user remote initiated tear down point-to-point IP connectivity

7.14.2.4.1 General

The MCData service shall support mechanisms that allow an authorized MCData user to tear down remotely an established point-to-point IP connectivity. This encompasses the procedure of a remote MCData user that addresses the tear down of an IP connectivity between the requested MCData client and the destination MCData client.

7.14.2.4.2 Procedure

The procedure in figure 7.14.2.4.2-1 describes the case where an authorised MCData user triggers remotely the tear down of a point-to-point IP connectivity connection between two other MCData users, the asked MCData user that tear down IP connectivity session to the targeted MCData user.

Pre-conditions:

- The point-to-point IP connectivity has been established between MCData client 2 and MCData client 3.

- Optionally, the MCData client1 may have activated a functional alias to be used.

- MCData client 1 is authorized to tear down point-to-point IP connectivity sessions.



**Figure 7.14.2.4.2-1: Remote initiated tear down of a point-to-point IP connectivity**

1. MCData client 1 would like to tear down a point-to-point IP connectivity between two other MCData clients, the asked MCData client 2 and the targeted MCData client 3.

2. The MCData client 1 sends a MCData remote IPcon point-to-point tear down request towards the MCData server. The MCData remote IPcon point-to-point tear down request contains the MCData IDs of MCData client 2 and MCData client 3. MCData user at MCData client 1 may include its associated functional alias.

3. MCData server checks whether MCData user at MCData client 1 is authorized to send MCData remote IPcon point-to-point tear down request and checks if the asked MCData client 2 is allowed to tear down an IP connectivity point-to-point session.

4. MCData server sends the MCData remote IPcon point-to-point tear down request towards the MCData client 2.

5. MCData client 2 considers the provided targeted MCData ID to tear down the point-to-point IP connectivity to MCData client 3. The status of the IP connectivity tear down request shall be forwarded by MCData client 2 to remote MCData client 1.

6. MCData client 2 sends MCData remote IPcon point-to-point tear down response to the MCData server encompassing the tear down IP connectivity status between MCData client 2 and MCData client 3.

7. The MCData server forwards the MCData remote IPcon point-to-point tear down response to the remote MCData client 1.

7.14.2.5 Remote initiated point-to-point IP connectivity application priority change

7.14.2.5.1 General

The MCData service shall support mechanisms that allow an authorized MCData user to trigger remotely the adaptation of a point-to-point IP connectivity data bearer service priority. This encompasses the procedure of a remote MCData user that addresses the priority change of a point-to-point IP connectivity between the requested MCData clients.

7.14.2.5.2 Procedure

The procedure in figure 7.14.2.5.2-1 describes the case where an authorised MCData user triggers remotely the priority change of a point-to-point IP connectivity connection between two other MCData users.

Pre-conditions:

- Optionally, the MCData client1 may have activated a functional alias to be used.

- A point-to-point IP connectivity is established between MCData client 2 and MCData client 3.

- MCData client 1 is authorized to change remotely communication priority of a point-to-point IP connectivity session.

**Figure 7.14.2.5.2-1: Point-to-point IP connectivity application priority change request by a remote MCData client**

1. MCData client 1 would like to change the priority that corresponds to an established point-to-point IP connectivity between MCData client 2 and MCData client 3.

2. The MCData client 1 sends a remote MCData IPcon point-to-point application priority change request towards the MCData server. The MCData IPcon point-to-point application priority change request contains the MCData IDs of MCData client 2 and MCData client 3. MCData user at MCData client 1 may include its associated functional alias.

3. MCData server checks whether MCData user at MCData client 1 is authorized to send a remote MCData IPcon point-to-point application priority change request.

4. MCData server applies the requested priority to the point-to-point IP connectivity between MCData client 2 and MCData client 3.

NOTE: Necessary adjustments in the relevant transport system can be included.

5. MCData server sends the remote MCData IPcon point-to-point application priority change response to MCData client 1 encompassing the priority status of the point-to-point IP connectivity between MCData client 2 and MCData client 3.

7.14.2.6 Group standalone IP connectivity using media plane

7.14.2.6.1 General

IP connectivity service capabilities enables authorized MCData unaware data host to use usual MCData service capabilities, e.g. data communication among them. This subsection describes the establishment of a group standalone IP connectivity to a selected MCData group results in affiliated group members exchanging IP data.

7.14.2.6.2 Procedure

The procedure in figure 7.14.2.6.2-1 describes the case where an IP connectivity capable MCData client is initiating group standalone MCData IP connectivity communication session with a MCData group for exchanging IP Data between group participants using MCData IPcon-2 reference point.

Pre-conditions:

- MCData client 1 to MCData client n belong to the same MCData group, are registered for receiving MCData service and are affiliated to the corresponding MCData group.

- The total data volume limit, e.g. daily time limit or total data volume per day, does not restrict the establishment of an IP connectivity MCData transmission.

- MCData client 1 to MCData client n are linked with individual data hosts.

- MCData client 1 to MCData client n belong to the same MCData system.

- The data hosts linked with the MCData clients already have an IP address allocated.

- MCData clients have IP connectivity capabilities.

- The linked data hosts are authorized to use the MCData clients to establish an IP connectivity.

NOTE 1: How the data host is authorized to use the MCData client is out of the scope of the present document.

- The MCData server has subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

- MCData clients understand the correspondence between the IP addresses of target data hosts and MCData clients. How this relationship is determined is out of scope of the present document.

- MCData clients understand the relationship between the addressing of IP packets which are intended to be sent to the group and the MCData group address.

NOTE 2: The allocation of IP addresses for group addressed communication is outside the scope of the present document.

**Figure 7.14.2.6.2-1: Establishment of IPcon group standalone communication session**

1. MCData client 1 receives an IP packet from the IP data host which is addressed to an IP address that signifies a MCData group destination.

2. MCData client 1 uses the MCData group standalone short data service using media plane procedure in accordance with clause 7.4.2.6 to establish IPcon group standalone communication session to the MCData user that are members of the corresponding MCData group with the following scope:

- IP Data exchange

- The application identifier is used to indicate about the use of a group communication in the IP connectivity context

- Payload destination indicates the consumption by the linked data host

- The use of disposition shall be discarded for the use of IP connectivity

3. MCData clients 2-n recognize that the payload is for IP connectivity service and forward the received IP data to the linked data hosts.