**3GPP TSG-SA WG6 Meeting #35 S6-200272 (was -0086, -0191)**

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

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.282** | **CR** | **0205** | **rev** | **1** | **Current version:** | **16.5.0** |  |
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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:*** | Enhancements and clarifications for file repair and file delivery using MBMS | | | | | | | | | |
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| ***Source to WG:*** | AT&T | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eMCData2 | | | | |  | ***Date:*** | | | 2020-01-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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)* | |
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| ***Reason for change:*** | | During SA6#34, certain technical issue related to file repair and file delivery over MBMS have been identified and some Rel-16 CR were approved. This CR attempts to further address the solutions and clarify / document the issues, as follows:   1. File repair is applicable to all incomplete downloads not just MBMS. 2. As discussed in Reno at SA6#34, the file repair can be based on partial transfer of data and is executed between the MCData content server and the media storage client. 3. How to provide end-to-end encryption in case of file repair still needs to be decided (currently is FFS). 4. There seems to be some confused text and conflation of concepts and procedures between MBMS User Service and xMB interface. This CR clarifies that in case of file distribution using MBMS it should be possible: 5. To use MB2, without using MBMS User Service 6. To use xMB with MBMS User Service   Added ENs as reminder to check correctness of Stage 2 procedures in 23.282, as MB2 is mentioned in sections and flows with MBMS user services | | | | | | | | |
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| ***Summary of change:*** | | Adds/changes text and Editor’s notes addressing the issues identified above. | | | | | | | | |
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| ***Consequences if not approved:*** | | Partial lack of functionality and unclear behavior may lead to underperformance and misunderstanding/mis-implementation of the spec. | | | | | | | | |
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| ***Clauses affected:*** | | 5.4, 5.12, 6.4.3.1.2, 7.3.5.3.1.2, 7.3.5.3.2, 7.5.2.1.3, 7.5.2.1.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

## 5.4 File distribution capability

The MCData service shall support distribution of files for one-to-one and group communications.

The MCData service shall allow the MCData user to send a file or a URL of a file to another MCData user. The source of the file can originate either from an MCData client or from a network functional entity. The generated URL shall be a reference to a stored file to allow for subsequent retrieval. The file storage policy may determine the availability of the file to be retrieved, and is subject to expiry time and size limitations.

When the file delivery request is set by the sending user to mandatory download, the MCData service shall proceed to deliver the file to the recipient when possible. The file distribution mechanisms shall support both unicast and broadcast delivery methods.

Editor's note: Requirements for automatic re-try mechanisms and maximum retry count is FFS.

The MCData service shall support aggregation of download completion and disposition notification reports when files are distributed to multiple recipients.

The MCData service shall support mechanisms for detection and recovery of lost data. A receiving MCData client should be able to:

* detect and report when a transfer did not complete properly and request retransmission;
* identify and re-request the missing parts of an incompletely received file; and
* accept partial retransmissions and use them to reconstitute the original file.

Editor's note: File repair when end-to-end encryption is used is FFS.

When employing MBMS delivery:

* MCData may use the MB2 interface specified in 3GPP TS 23.468 [8]. See also Group Communication Delivery Method in 3GPP TS 26.346 [21]; or
* if MBMS user services and Download Delivery Method (see 3GPP TS 26.346 [21]) are utilized, MCData shall use the xMB interface specified in 3GPP TS 26.348 [19].

For the MBMS path, figure 5.4-1 shows both the MB2 and the xMB interfaces.



Figure 5.4-1 MCData on-network architecture showing the unicast and MBMS delivery paths

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

## 5.12 MBMS user service architecture requirements

The MBMS user service architecture offers a set of delivery methods to applications, specified in 3GPP TS 26.346 [21]. The MBMS download delivery method is used for the delivery of files over MBMS and provides reliability control by means of forward-error-correction.

The MCData File Distribution capability can use the MBMS download delivery method by including, in the MC service-on network architecture (subclause 5.2.6 from 3GPP TS 23.280 [5]), the MBMS user service architecture (3GPP TS 26.346 [21]), with the MCData server assuming the role of the content provider.

The MCData server may determine the MBMS broadcast area based on the cell identities of the affiliated group members received over GC1.

When the xMB interface is used, the MCData server uses the xMB mission critical extension, specified in 3GPP TS 26.348 [19] to control the QoS and the MBMS broadcast area of the MBMS user services.The MCData server also provides a file delivery manifest over xMB-C (see subclause 5.6.2 from 3GPP TS 26.348 [19]) describing the list of files to be broadcasted, and, for each file, the target completion date and the number of repetitions.

The MBMS user service metada, which provides the delivery and schedule parameters, are returned to the MCData server after the MBMS session creation or update, under the form of a SA file (annex L.3A from 3GPP TS 26.346 [21]). The MCData server signals this SA file, together with the service id and the uri of the file to be received to the targetted MCData clients.

Editor's note: it is FFS how the service announcement channel (3GPP TS 26.346) to deliver the MBMS user service metadata can be used.

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

##### 6.4.3.1.2 MCData server

The MCData server functional entity provides centralised support for MCData services suite.Conversation management, robots, enhanced status, database enquiries and secured internet MCData services requiring one-to-one or group data communication are realized using SDS, file distribution, data streaming and IP connectivity MCData communication capabilities.

All the MCData clients supporting users belonging to a single group are required to use the same MCData server for that group. An MCData client supporting a user involved in multiple groups can have relationships with multiple MCData servers.

For MBMS delivery, the MCData server functional entity represents a specific instantiation of the GCS AS described in 3GPP TS 23.468 [8] to control multicast and unicast operations for group communications.

If the MBMS user service architecture is utilized, the MCData server functional entity represents a specific instantiation of the content provider as described in 3GPP TS 26.346 [21] to control multicast operations for file distribution.

The MCData server functional entity is supported by the SIP AS functional entity of the signalling control plane.

The MCData server shall support the controlling role and the participating role. The MCData server may perform the controlling role for one-to-one and group data communication. The MCData server performing the controlling role for a one-to-one or group data communication may also perform a participating role for the same one-to-one or group data communication. For each one-to-one and group data communication, there shall be only one MCData server assuming the controlling role, while one or more MCData servers in participating role may be involved.

The MCData server performing the controlling role is responsible for:

- handling transmission and reception control (e.g. policy enforcement for participation in the MCData group communication) towards all the MCData users of the one-to-one and group data communication;

- interfacing with the group management server for group policy and affiliation status information of this MCData server's served affiliated users;

- managing SDS and FD data distribution during MCData group communication; and

- managing the MCData transport service for IP connectivity.

The MCData server performing the participating role is responsible for:

- handling transmission control (e.g. authorization for participation in the MCData group communication) to MCData users of the one-to-one and group data communication;

- group affiliation support for MCData user, including enforcement of maximum Nc2 number of simultaneous group affiliations by a user;

- interfacing with the group management server for group policy and affiliation status information of this MCData server's served affiliated users;

- relaying the MCData communication messages between the MCData client and the MCData server performing the controlling role; and

- handling reception control (e.g. temporarily storing the data to present to the MCData user as required) to its MCData users of the one-to-one and group data communication.

NOTE: The MCData server in the controlling role and the MCData server in the participating role can belong to the same MCData system.

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

###### 7.3.5.3.1.2 Procedure

Editor’s note: The procedure in this clause needs to be revised considering that MBMS user services, as specified in 3GPP TS 26.346 [21], cannot be supported over the MB2 interface.

The procedure figure 7.3.5.3.1.2-1 shows only one of the receiving MCData clients using an MBMS user service.

Pre-conditions:

- The participating users are already affiliated.



Figure 7.3.5.3.1.2-1: Use of pre-established MBMS user service

1. The MCData server determines to create an MBMS user service with a given MBMS user service id. If the MCData server makes use of the xMB interface, the MCData server creates an MBMS user service over xMB-C (subclause 5.3 from 3GPP TS 26.348 [19]).

NOTE 1: The procedure to determine the creation of MBMS user services is implementation specific.

2. If the MCData server makes use of the xMB interface, the MCData server creates an MBMS session over xMB-C for the MBMS user service (subclause 5.4 from 3GPP TS 26.348 [19]), with the type set to "Files" to use the MBMS download delivery method. This MBMS session will be used for file distribution. In response, the MCData server gets the TMGI of the MBMS bearer used for the MBMS session, and the SA file containing the metadata of the MBMS user service.

3a. Else, the MCData server activates an MBMS bearer over MB2-C for the MBMS user service.

3b. The MCData server, if not already in the possession of the SA file, generates the SA file containing the metadata of the MBMS user service.

4. The MCData server passes using control plane signalling the MBMS user service info for the service description associated with the pre-established MBMS user service to the MCData client. The MCData client obtains the TMGI, identifying the MBMS bearer, from the SA file included in the MBMS user service description.

5. The MCData client stores the information associated with the MBMS user service. The MCData client uses the TMGI and other MBMS user service related information to activate the monitoring of the MBMS bearer.

6. The MCData client that enters or is in the service area of at least one announced TMGI indicates to the MCData server that the MCData client is able to receive file distributed over MBMS, whereby the MCData server may decide to use this MBMS user service instead of unicast bearer for MC communication sessions.

NOTE 2: Step 4 is optional for the MCData UE on subsequent MBMS user service announcements.

NOTE 3: The information flow is specified in subclause 10.7.2.2 from 3GPP TS 23.280 [5].

7. If the MCData server makes use of the xMB interface and wants to deliver a file to a group, the MCData server updates the MBMS session to provide the file location and its uri.

8. The MCData server signals the file transmission over the MBMS user service to the targetted MCData clients.

9. The file, transmitted with the MBMS download delivery method, is received by the MCData clients. If the MCData server does not make use of the xMB interface, the MCData server fragments the file to be sent, applies error correction according to the MBMS download delivery method (3GPP TS 26.346 [21]) and sent the FLUTE packets over MB2-U.

##### 7.3.5.3.2 Use of dynamic MBMS user service establishment

Editor’s note: The procedure in this clause needs to be revised considering that MBMS user services, as specified in 3GPP TS 26.346 [21], cannot be supported over the MB2 interface.

In this scenario depicted in figure 7.3.5.3.2-1, the MCData server decides to establish an MBMS user service for the distribution of a given file. The MBMS user service is announced to the MCData client, together with the file information to be received.

NOTE 1: The MCData server logic for determining when to establish the new MBMS user service is implementation specific. For example, the MCData server could decide to establish the MBMS delivery based on the location of the UE's that are a part of the targeted group.



Figure 7.3.5.3.2-1: Use of dynamic MBMS user service establishment

1. The MCData server determines to create an MBMS user service with a given MBMS user service id for the group communication session. If the MCData server makes use of the xMB interface, the MCData server creates an MBMS user service over xMB-C (subclause 5.3 from 3GPP TS 26.348 [19]).

2. If the MCData server makes use of the xMB interface, the MCData server creates a MBMS session for the MBMS user service (subclause 5.4 from 3GPP TS 26.348 [19]), with the type set to "Files" to use the MBMS download delivery method, and provide the file location and its uri. In response, the MCData server gets the TMGI of the MBMS bearer used for the MBMS session, the SA file containing the metadata of the MBMS user service and the scheduling parameter for the file delivery.

3a. Else, the MCData server activates an MBMS bearer over MB2-C for the MBMS user service.

3b. The MCData server, if not already in the possession of the SA file, generates the SA file containing the metadata of the MBMS user service.

4. The MCData server passes using control plane signalling the SA file to the MCData client. The MCData client obtains the TMGI, identifying the MBMS bearer, from the SA file included in the MBMS user service description.

5. The MCData client stores the information associated with the MBMS user service. The MCData client uses the TMGI and other MBMS user service related information to activate the monitoring of the MBMS bearer.

6. The MCData client that enters or is in the service area of at least one announced TMGI indicates to the MCData server that the MCData client is able to receive file distributed over MBMS, whereby the MCData server may decide to use this MBMS user service instead of unicast bearer for MC communication sessions.

7. The MCData server signals the file transmission over the MBMS user service to the targetted MCData clients.

8. The file, transmitted with the MBMS download delivery method, is received by the MCData clients. If the MCData server does not make use of the xMB interface, the MCData server fragments the file to be sent, applies error correction according to the MBMS download delivery method (3GPP TS 26.346 [21]) and sent the FLUTE packets over MB2-U.

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

##### 7.5.2.1.3 MCData download data request

Table 7.5.2.1.3-1 describes the information flow for the MCData download data request sent from the MCData media storage client to the MCData content server.

Table 7.5.2.1.3-1: MCData download data request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData user downloading data |
| Content reference | M | URL reference to the content to download |
| Emergency indicator | O | Indicates that the data request is for MCData emergency communication |

Editor's note: it is FFS how the media storage client requests a file repair and indicates the missing data.

##### 7.5.2.1.4 MCData download data response

Table 7.5.2.1.4-1 describes the information flow for the MCData download data response sent from the MCData content server to the media storage client.

Table 7.5.2.1.4-1: MCData download data response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCData ID | M | The identity of the MCData user requesting to download data |
| Content (see NOTE) | O | Requested content to download |
| Result | M | Indicates success or failure of MCData download data request |
| NOTE: Content shall be present when the result of the MCData download data request indicates success. | | |

Editor's note: it is FFS how the content sever indicates a full file download versus a patch file to be used in a repair.

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