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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
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Contents

Foreword

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1 Scope

This document specifies the functional architecture, procedures and information flows needed to support the Mission Critical Data (MCData) services. MCData is a suite of services which utilizes the common functional architecture defined in 3GPP TS 23.280 [5] to support MC services over LTE including the common services core.

MCData services suite consists of the following sub-services:

- short data service (SDS);
- file distribution (FD);
- data streaming (DS); and

NOTE: Procedures for DS are not covered in the current specification.

- IP connectivity.

MCData features include:

- conversation management;
- transmission and reception control;
- communication release; and
- enhanced status.

The corresponding service requirements are defined in 3GPP TS 22.282 [3] and 3GPP TS 22.280 [2].

The present document is applicable primarily to MCData service using E-UTRAN access based on the EPC architecture defined in 3GPP TS 23.401 [4]. Certain application functions of the MCData service could also be supported via non-3GPP access networks but no additional functionality is specified to support non-3GPP access.

The MCData service can be used for public safety applications and also for general commercial applications e.g. utility companies and railways.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.280: "Mission Critical Common Requirements (MCCoRe); Stage 1".

[3] 3GPP TS 22.282: "Mission Critical Data services".

[4] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[5] 3GPP TS 23.280: "Common functional architecture and information flows to support mission critical communication services; Stage 2".

[6] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[7] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[8] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE_LTE); Stage 2".

[9] 3GPP TS 23.237: "IP Multimedia Subsystem (IMS) Service Continuity; Stage 2".

[10] 3GPP TS 23.002: "Network Architecture".

[11] 3GPP TS 23.379: "Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); stage 2".

[12] 3GPP TS 29.283: "Diameter data management applications".

[13] 3GPP TS 33.180: "Security of the Mission Critical Service".

[14] 3GPP TS 23.203: "Policy and charging control architecture".

[15] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[16] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE_LTE); MB2 reference point; Stage 3".

[17] 3GPP TS 29.214: "Policy and charging control over Rx reference point".

[18] 3GPP TS 23.283: "Mission Critical Communication Interworking with Land Mobile Radio Systems; Stage 2".

[19] 3GPP TS 26.348: "Northbound Application Programming Interface (API) for Multimedia Broadcast/Multicast Service (MBMS) at the xMB reference point".

[20] 3GPP TS 29.116: "Representational state transfer over xMB reference point between content provider and BM-SC".

[21] 3GPP TS 26.346: "Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

Auto-receive: A mechanism where data smaller than a configured size threshold are delivered to the receiving MCData client(s) from the MCData server i.e. without waiting for the receiving user to indicate a present need for the data.

Conversation identifier: A universally unique identifier that identifies a series of related MCData transactions.

Data stream: A sequence of data that is agnostic to any underlying media (e.g. audio, video, telemetry data), on which processing of data (e.g. semantic, syntactic, save or filter operation) can begin before all the content is received.

FD disposition: is one of "not downloaded" and "download completed".

Folder Identifier: A unique identifier that identifies a folder in the MCData message store

IP Data: Structured or unstructured payload that is transparent to the MCData transport service.

MCData client: An instance of an MC service client that provides the client application function for the MCData service.

MCData emergency communication: An MC service emergency group communication or MC service emergency private communication within the MCData service.

MCData group: An MC service group configured for MCData service.

MCData group affiliation: An MC service group affiliation for MCData.

MCData group communication: A one-to-many communication using an MCData service.

MCData group de-affiliation: An MC service group de-affiliation for MCData.

MCData ID: An instance of an MC service ID within the MCData service.

MCData imminent peril communication: An MC service imminent peril group communication within the MCData service.

MCData server: An instance of an MC service server that provides the server application function for the MCData service.

MCData service: A data communication service comprising at least one underlying generic capability (e.g. SDS, file distribution, data streaming) with strong security, high availability, reliability and priority handling to support applications for mission critical organizations and mission critical applications for other businesses and organizations (e.g. utilities, railways).

MCData UE: An MC service UE that can be used to participate in MCData services.

MCData user: An MC service user who is authorized for MCData services suite via an MCData UE.

Metadata: data associated with a transmitted or stored SDS, file or data stream, consisting of information from messages (e.g. MCData IDs, conversation ID) and other related information (e.g. size, type).

Object: An MCData communication information (such as a message or a file) that is stored in the MCData message store with its associated metadata.

Object identifier: A unique identifier that identifies an object stored in the MCData message store.

Reception control: A mechanism that allows the MCData service to regulate data reception to the receiving MCData clients.

Reply identifier: A reference to the original MCData transaction to which the current transaction is a reply.

SDS data: A payload with limited size and variable content type used in SDS transactions.

SDS disposition: is one of "undelivered", "delivered" and "read".

Standalone communication: A unidirectional one-to-one or group data communication completed after one transaction.

Transaction identifier: A unique identifier that identifies a MCData transaction within a conversation.

Transmission control: A mechanism that allows the MCData service to regulate data transmission requests from the sending MCData users, either prior to or after active sending from the MCData UE.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.280 [2] apply:

Mission Critical
Mission Critical Applications
Mission Critical Service
Mission Critical Organization

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.282 [3] apply:

MCData system

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.280 [5] apply:

MC service client
MC service group

MC service group affiliation
MC service group de-affiliation
MC service ID
MC service server

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.203 [14] apply:

Dynamic PCC rule

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

DS	Data Streaming
E2EE	End to End Encryption
FD	File Distribution
ITSI	Individual TETRA Subscriber Identity
LMR	Land Mobile Radio
MC	Mission Critical
MCData ID	MCData user identity
PCC	Policy and Charging Control
PCRF	Policy and Charging Rules Function
QCI	QoS Class Identifier
RSI	Radio Set Identity
SDS	Short Data Service
UM	Unacknowledged Mode

4 Introduction

The MCData service suite provides a set of generic capabilities and specific services to enable one-to-one and group data communications between MCData users.

The MCData architecture utilises the common functional architecture to support mission critical services over LTE defined in 3GPP TS 23.280 [5] and aspects of the IMS architecture defined in 3GPP TS 23.228 [6], the Proximity-based Services (ProSe) architecture defined in 3GPP TS 23.303 [7], the Group Communication System Enablers for LTE (GCSE_LTE) architecture defined in 3GPP TS 23.468 [8] defining MBMS support via the MB2 interface, the MBMS User Service architecture defined in 3GPP TS 26.348 [19], the Security of the Mission Critical Service in 3GPP TS 33.180 [13] and the PS-PS access transfer procedures defined in 3GPP TS 23.237 [9] to enable support of the MCData service.

The MCData UE primarily obtains access to the MCData service via E-UTRAN, using the EPS architecture defined in 3GPP TS 23.401 [4]. Certain application functions of MCData service can be accessed using MCData UEs via non-3GPP access networks.

The MCData system provides the function to support interworking with LMR systems defined in 3GPP TS 23.283 [18].

5 Architectural requirements

5.1 Transmission control

The MCData service supports the ability to transmit SDS messages automatically towards the selected recipient user (private communication) or members of the selected MCData group. The MCData server may still reject the sent message (e.g. if there is no authority to send).

For MCData types other than SDS using signalling control plane, the MCData service invokes a transmission request grant approach before data is permitted to be transmitted. The MCData service provides configurable limits for the

maximum amount of data for and/or maximum amount of time that an MCData user can transmit in a single request, which may be configured by the MCData administrator.

For congestion control, related to transmission requests, the MCData service may perform the following:

- reject the data transmission requests and then shall notify the MCData user of the rejection;
- queue the data transmission requests; or
- at any time, withhold the permission to transmit data automatically.

The MCData service shall notify the transmitting MCData group member if there are no other MCData group members affiliated to the MCData group.

The MCData service supports the lossless communication, and it can be configured by the MCData administrator for the private communication and group communication. The lossless communication can be supported only if the user has a valid and active MCData message store account. If the lossless communication is configured for private communication and if the MCData communication cannot be delivered to the MCData user (e.g. if the recipient is not available at the time of data delivery or network congestion), it shall be made available to the MCData user by storing it in the MCData user's personal account in the MCData message store. If a MCData group is configured for lossless communication, all members of the selected MCData group shall receive the MCData communication, at a time dependent on affiliation status. An affiliated group member of this MCData group shall receive the MCData communication when they are sent. A group member that is not affiliated during MCData communication, the MCData communication shall be made available by storing it in the group member’s personal account in the MCData message store. If a MCData group is not configured for lossless communication, only the affiliated members of the selected MCData group shall receive the MCData communication.

In order to support lossless communication, below are the conditions that needs to be satisfied:

- Lossless communication is provisioned
- MCData user has the valid MCData message store account
- Store communication into message store configuration parameter is enabled
- MCData user has requested to store the MCData communication into MCData message store

5.2 Reception control

The MCData service shall support the ability to receive small amounts of data automatically. The MCData service may store data waiting for delivery in a temporary store, and notify availability to the receiving MCData users, i.e. deferred delivery. The data which is temporarily stored may be configured with "time to live" value, and subsequently, the data may be purged from the temporary store upon expiry of "time to live".

When a MCData user has an active MCData message store account and has activated lossless communication, the MCData service deferred delivery shall not be used when the user is offline.

The recipient individual user (private communication) or affiliated members of the MCData group(s) shall be notified of the list of available data either on request or periodically.

The MCData service shall provide a mechanism for the MCData user to select data to be downloaded from the list corresponding to the temporary store, subject to limitations such as expiry time and size.

The MCData service shall support the ability to automatically deliver files with a size less than a configured threshold value (i.e. auto-receive). The data size for auto-receive shall be configured by the MCData administrator.

5.3 Short Data Service capability

The MCData service shall support SDS capability for one-to-one and group communications.

The SDS capability shall support messages with a maximum payload of at least 1000 bytes. The supported message types shall include text, binary, or hyperlinks. Multiple message types may be interleaved within in a single message

payload. The payload shall support inclusion of location information of the sending MCData user, with or without user or application provided data.

The MCData service shall support messages to be sent over the signalling plane or the media plane.

The SDS capability shall allow for multiple related messages to be correlated and sequenced within the MCData service.

The MCData user shall be able to selectively request read and delivery receipt indication for the sent messages. The message delivery history information should be made available to an authorized MCData user.

The MCData service may support aggregation of disposition notifications when SDS messages are sent to multiple recipients.

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.

The MCData service shall support aggregation of download completed 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.

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.

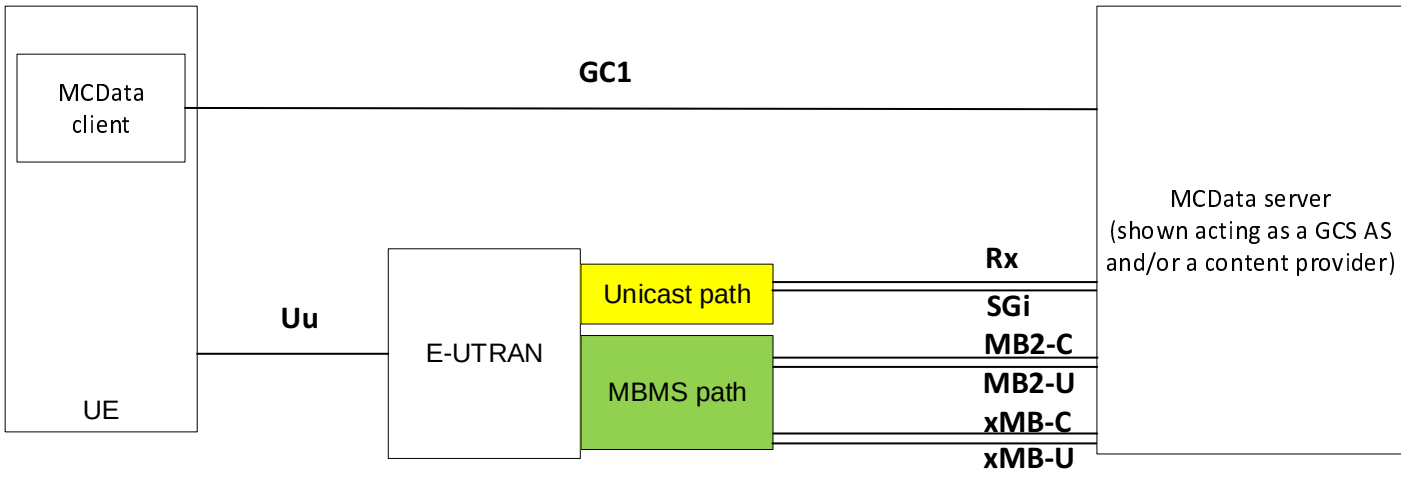

Figure 5.4-1 MCData on-network architecture showing the unicast and MBMS delivery paths

5.5 Data streaming capability

The MCData service may support data streaming capability for one-to-one and group communications.

The MCData service may allow the MCData user to send a data stream or a URL of a data stream to another MCData user. The source of the data stream can originate either from an MCData client or from a network functional entity. For a data stream originating at a network functional entity, the data stream may be provided by an MCData user. The data streaming mechanisms shall support both unicast and broadcast delivery methods.

When the data streaming request is set to automatic reception, the MCData service may not require consent from the receiving MCData user.

The MCData user may be able to apply controls (i.e. start, stop, cancel) to the streams, and on a per recipient basis.

The stream may be terminated through an explicit user control (i.e. stop, cancel operation) or by reaching the end of the streamed content.

5.6 MCData group affiliation and MCData group de-affiliation

MCData groups may be configured with one or more MCData sub-services (e.g. SDS, FD, DS) as specified within the MCData service. When an MCData user affiliates to an MCData group, the MCData user is affiliated to each of those MCData sub-services configured in the MCData group. The list of MCData sub-services configured for an MCData group shall be included in the MCData group configuration data.

MCData group affiliation shall be as specified in clause 5.2.5 of 3GPP TS 23.280 [5]. In addition, the following requirements shall be fulfilled by the MCData service for MCData users affiliated to MCData groups:

- MCData users receive notifications for participating in MCData sub-services and invitations for their affiliated MCData group(s).
- MCData users select an affiliated MCData group to initiate a new message, file distribution, data stream, etc.
- MCData users receive messages, files, data streams, enhanced status updates, etc, from their affiliated MCData group(s).

5.7 Conversation management

The conversation management:

1. shall include a service indication for conversation management in each SDS and FD transaction.
2. may be comprised of SDS transactions or FD transactions or a combination of both.
3. shall include a conversation identifier in each SDS and FD transaction.
4. shall treat conversation between different set of users (either in one-to-one or group) as a separate conversation.
5. shall treat conversation between the same set of users (either in one-to-one or group), but with a different conversation identifier as a separate conversation.

5.8 Bearer management

5.8.1 General

The MCData UE shall use the APNs as defined in subclause 5.2.7.0 and table A.6-1 of 3GPP TS 23.280 [5]. The MCData UE shall use the MC services APN as defined in subclause 5.2.7.0 and table A.6-1 of 3GPP TS 23.280 [5] for the SIP-1 reference point.

5.8.2 EPS bearer considerations

The EPS bearer considerations specified in subclause 5.2.7.2 of 3GPP TS 23.280 [5] shall apply.

5.8.3 EPS unicast bearer considerations for MCData

For an MCData session request, resources shall be requested utilising interaction with dynamic PCC. The MCData system shall request resources over Rx to a PCRF. The dedicated bearer for MCData media shall utilise the QCI value of 70 (as specified in 3GPP TS 23.203 [14]). The request of resources over Rx shall include an application identifier for MCData in order for the PCRF to evaluate the correct QCI.

The UE is required to support at minimum one bearer, which is used for MCData (see annex A in 3GPP TS 36.331 [15]).

Depending on operator policy, for media plane:

- the MCData system may be able to request modification of the priority (ARP) of an existing bearer without the need to initiate a new dedicated GBR bearer; or
- the allocation of EPS bearers of desired priority for MCData communications may cause the pre-emption of lower priority pre-emptible EPS bearers (for MCData or for other applications), if the maximum number of bearers or maximum traffic capacity has been reached, in favour of the newly initiated MCData EPS bearer. In this case, if the new EPS bearer to be used for MCData communication has higher priority level (ARP) than other bearer(s), is allocated with a capability to pre-empt other bearers and the other bearer(s) are pre-emptible, then the EPS bearer for MCData communication pre-empts one (or more) of the existing EPS bearer(s).

NOTE: Operator policy takes into account regional/national requirements.

The EPS bearer(s) for MCData emergency communications shall have highest priority level among MCData communication types. The EPS bearer(s) for MCData imminent peril communications shall have higher priority level than for normal MCData communications but lower than the priority level for MCData emergency communications.

5.8.4 MBMS bearer management

The MBMS bearer management for MC services is specified in subclause 5.2.7.1 of 3GPP TS 23.280 [5].

5.9 Disposition

Disposition requests and notifications can be sent "in-band" using the same mechanism used for transport of the data, or can be sent "out-of-band" when the mechanism used for transport of the data is no longer available.

For standalone SDS and FD, the MCData UE shall use the signalling plane for disposition request and disposition notifications. For session SDS, the MCData UE shall use:

- the media plane for disposition request and disposition notifications; and
- the signalling plane for disposition notifications when the media plane is no longer available.

5.10 MCData message store

MCData message store is used by MCData users to store their MCData communications permanently; it shall provide secured storage area for each authorized MCData user having a user account. The storage area is identified by the MCData user's MCData ID. The MCData message store shall allow an MCData user to access only the storage area that he is authorized to access. A user (i.e. a dispatcher) other than the user account holder shall be able to access the account holder's storage area if authorized.

During an active MCData communication, the participating function on the MCData server of a MCData user participant shall, if the configuration to store the MCData communication is enabled for and if requested by the MCData user, deposit messages and files exchanged in the conversation to the MCData user's storage area in the MCData message store. When depositing the MCData communication into the MCData message store, if no such MCData user account is available on the MCData message store the MCData server shall create the user's account first and then deposit the MCData communications. The MCData message store shall support user account creation and deposit MCData communications operations from the MCData server after successful authentication and authorization. The MCData message store shall support the message store client to retrieve, update, delete, search and synchronize MCData communications stored in the MCData message store, after successful authentication and authorization.

The MCData user shall have an option if he wants to store the MCData communications in the MCData message store or not. Based on the request from MCData user, messages and files exchanged in an active MCData communication shall be stored as objects in the MCData message store. A stored object shall contain the following information:

1. The message or file itself; and
2. Associated metadata, consisting of:
    a. information retrieved from the information elements of the message or file, such as MCData IDs, Conversation identifier etc.; and
    b. other information, such as content type (message or file), status ("seen", "received by", "read by ", "downloaded by " etc).

If a file is distributed indirectly with a URL in a message, when this message is stored in the MCData user's account in the MCData message store, it could be stored as:

1. an object as the original message with the URL; or
2. an object as the message with a revised URL that the URL indicates where the file, retrieved from the MCData content server, is stored separately in the MCData user's storage account. With proper security and authorization, this URL can be accessible by other network entities such as the MCData content server.

NOTE: It is the decision of SA3 on the mechanism to store an encrypted message or file in the MCData message store.

When a MCData user logs onto a UE with successful authentication and authorization and obtains the user service profile, the message store client on the UE shall synchronize with the user's account on the MCData message store, either automatically or manually (i.e. interacts with the user on which option to synchronize or no synchronization at all), before any MCData service starts.

5.11 IP connectivity (IPcon) capability

IP connectivity service enables the exchange of IP Data using MCData transport service and provides the transport of IP Data for e.g. data hosts, servers, etc. that do not have mission critical communication capabilities. The exchange of IP Data is not limited in a transaction.

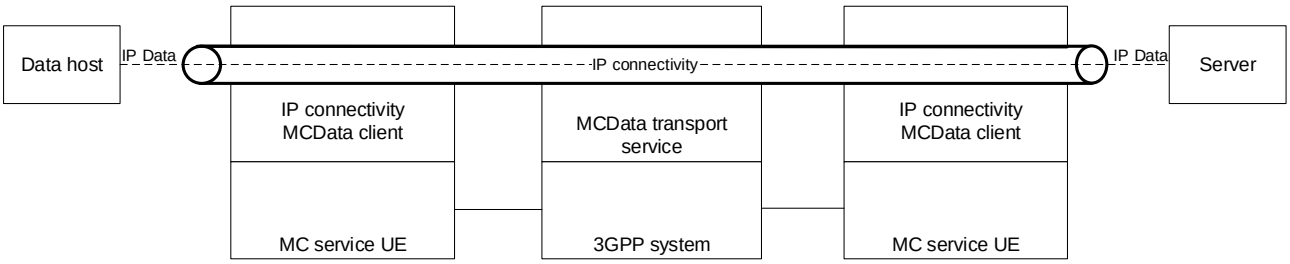

Figure 5.11-1: IP connectivity model

The corresponding MCData client enables bidirectional IP Data communication with the support of the IP connectivity service and thus forms the gateway to data hosts or servers. Therefore, the IP connectivity MCData client requests the MCData transport service with the associated QoS requirement and communication priority.

An authorised MCData client supporting IP connectivity capabilities is able to bar incoming IP connectivity requests either on demand or by providing a list of excluded origins identified by the MCData ID and, if available, by the functional alias.

For IP connectivity, the MCData server may support following limitation to exchange IP Data:

- limit the total data volume between the authorized MCData clients, divided by transmission and reception;
- max time limit, e.g. total minutes or allow exchange between predefined start and end time.

IP connectivity MCData service supports MCData transport services for one-to-one and group communication.

The IP address allocation necessary for user-IP connectivity MCData transport service is independent to the IP address allocation of the individual data hosts attached with the MCData client supporting IP connectivity capabilities. The required IP address pools for the user-IP connectivity MCData service are managed by the IP connectivity MCData transport service.

NOTE: IP connectivity service on interworking is not covered in the current specification.

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 metadata, 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 targeted MCData clients.

NOTE: Use of service announcement channel to deliver MBMS user service metadata is not covered in the current specification.

5.13 MBMS delivery via MB2 interface

MBMS delivery via MB2 applies to MCData services that use media plane for user traffic delivery.

5.14 Delivery Notification

A MCData user may request a delivery report (such as delivered, message read, or file downloaded etc.) when sending a MCData data (i.e. a message or a file). The recipient((s) shall respond with the proper delivery status response(s) (such as delivered, message read, or file downloaded etc.) according to what is requested in the delivery report. The sender of the MCData data may include multiple delivery status (such as delivered, message read, or file downloaded etc.) in the delivery report and the recipient(s) shall respond accordingly.

When the recipient is offline and receives a MCData data with request for delivery report, the delivery status response(s) shall follow one of the two principles below:

1. If the deferred delivery is used to deliver the MCData data, the delivery status response(s) shall be determined and responded by the recipient when the data is delivered. The MCData server may send a provisional delivery status report (such as the recipient is offline and the data will be delivered when the recipient is online or discarded due to timeout etc.) to inform the sender about the data delivery progress.

2. If the data is delivered with lossless communication, the MCData server shall respond with a delivered status report to the sender once the data is deposited into the recipient's MCData message store account. If the message read or file downloaded status is requested, the recipient shall respond it when the data is synced on the user device and processed by the recipient.

5A Involved business relationships

The description of the involved business relationships for the MCData service is contained in clause 6 of 3GPP TS 23.280 [5].

6 Functional model

6.1 General

This clause defines the functional model for MCData service.

The security solution for the MCData service, including end-to-end encryption, is specified in 3GPP TS 33.180 [13].

6.2 Description of the planes

The functional model for the support of MCData is defined as a series of planes to allow for the breakdown of the architectural description.

The description of the planes and the relationship between the planes are contained in the common functional architecture to support MC services in 3GPP TS 23.280 [5].

6.3 Transmission and reception control aspects

6.3.1 General

The transmission and reception control are functions of the MCData server.

For small data transmissions there is no need for prior grant of request to transmit. The procedures in the present document describe when data is automatically sent.

For large data transmissions, i.e. large files, the data is transmitted only after request to transmit is granted. The data to be transmitted and/or received may be stored in a data repository associated with the transmission and reception control functions.

NOTE: An overview of transmission control process and possible arbitration mechanisms is provided in the Annex B.

6.4 Generic functional model

6.4.1 On-network functional model

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

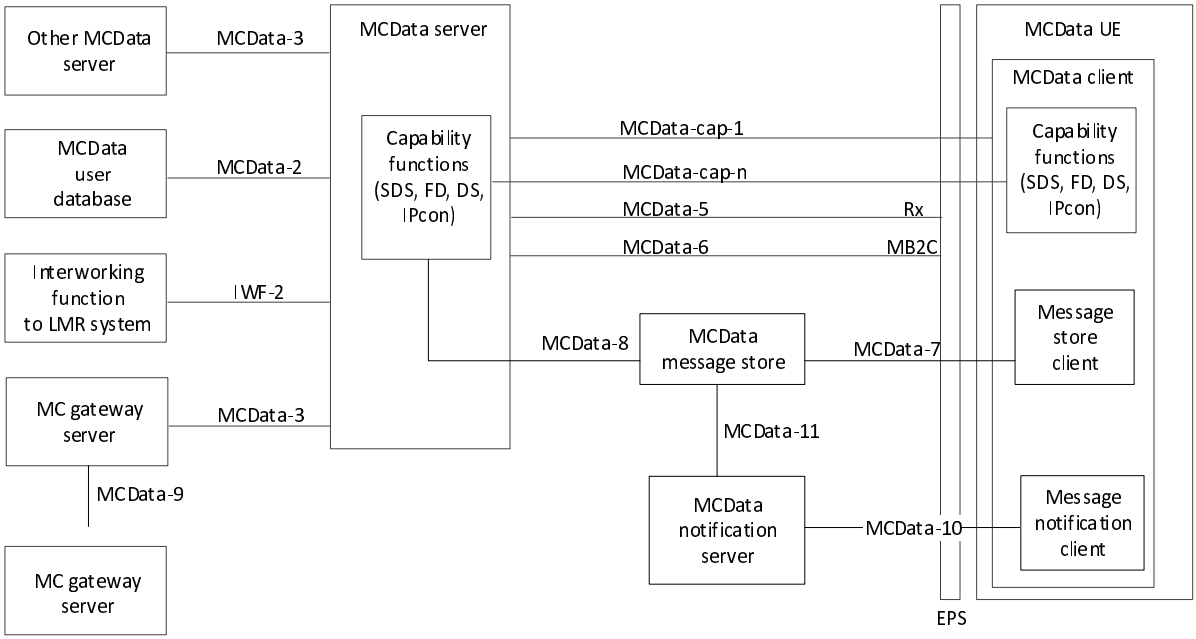

Figure 6.4.1-1: Generic application plane functional model

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 MCData notification server) and the associated new reference points are the responsibility of SA3 and thus outside the scope of the present document.

6.4.2 Off-network functional model

6.4.3 Functional entities description

Editor's note: Combining functional models describing each capability into one functional model is FFS.

6.4.3.1 Application plane

6.4.3.1.1 MCData client

The MCData client functional entity acts as the user agent for all MCData application transactions. The client supports SDS, file distribution, data streaming and IP connectivity MCData capabilities utilized by MCData services like conversation management, robots control, enhanced status, database enquiries and secured internet.

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.

6.4.3.1.3 MCData user database

This functional entity contains information of the MCData user profile associated with an MCData ID that is held by the MCData service provider at the application plane. The MCData user profile is determined by the mission critical organization, the MCData service provider, and potentially the MCData user.

6.4.3.1.4 Interworking function to LMR system

The functional entity is specified in 3GPP TS 23.283 [18].

6.4.3.1.5 MC gateway server

The MC gateway server provides support for MCData interconnection services with a partner MCData system in a different trust domain whilst providing topology hiding. It acts as a proxy for one or more MCData servers in the partner MCData system without needing to expose the MCData servers in the primary MCData system outside the trusted domain of the primary MCData system. It may be a role of the MCData server described in subclause 6.4.3.1.2 of the present document.

The MC gateway server is responsible for relaying call control and transmission control signalling messages, and media between MCData servers within the MCData system and the interconnected MCData system.

6.4.3.2 Signalling control plane

The description of the signalling control plane is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.4.3.3 MCData message store

The MCData message store is a network base persistent store that allows Mission Critical Organization to configure their MCData users to permanently store their MCData communications. Once configured a MCData user will be allocated a secured storage area (i.e. size) in the MCData message store that is only accessible by that configured MCData user and any authorized users. The MCData user can manage how and what will be stored in his personal message store with the support of management operations such as creating, deleting and merging folders, moving stored messages and files around and synchronization all used devices to provide the same contxt view etc.

NOTE: The security aspects of access and management (such as read/write/update/sync etc.) of personal message store are the responsibility of SA3 and thus outside the scope of the present document.

6.4.3.4 Message store client

The Message store client is used to support MCData client to manage the MCData communication history stored in MCData message store for a particular MCData user, It supports the secure access to a MCData user's configured MCData message store area and operations relevant to the stored communication history such as folders management and synchronization to the device local message store.

6.4.3.5 MCData notification server

The MCData notification server provides the centralized notification function in the network. The MCData 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 MCData 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 MCData 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 MCData 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 MCData notification server. However, if a Push notification delivery is used, then the MCData notification server asynchronously delivers the events received from the application server to the application through a PUSH Enabler server. The MCData notification server provides a consistent way to deliver notifications by all services to reduce the complexity of service logic on the application server.

It depends on deployment, if multiple MCData notification servers aredeployed.

6.4.3.6 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 authorized by the MCData notification server, the Message notification client will

communicate the callback endpoint, received from the MCData notification server, to the MCData message store to be used for notification message delivery.

When multiple MCData notification servers are deployed, the Message notification client shall select one for notification service at any given time. How the Message notification client selects the appropriate MCData notification server from multiple available MCData notification servers for service is implementation specific.

6.4.4 Reference points

6.4.4.1 Application plane

6.4.4.1.1 General

The reference points for the application plane of MCData service are described in the following subclauses.

6.4.4.1.2 Reference point MCData-2 (between the MCData server and the MCData user database)

The MCData-2 reference point, which exists between the MCData server and the MCData user database, is used by the MCData server to obtain information about a specific user. The MCData-2 reference point utilises a diameter management application protocol as defined in 3GPP TS 29.283 [12] and shall be intra-network.

6.4.4.1.3 Reference point MCData-3 (between the MCData server and the MCData server)

The MCData-3 reference point, which exists between the MCData server and the MCData server for MCData application signalling for establishing MCData sessions, shall use the SIP-2 reference point for transport and routing of signalling. If each MCData server is served by a different SIP core then the MCData-3 reference point shall also use the SIP-3 reference point for transport and routing of signalling. Media is also transferred using the MCData-3 reference point.

6.4.4.1.3A Reference point MCData-5 (between the MCData server and the EPS)

The MCData-5 reference point, which exists between the MCData server and the EPS, is used, subject to the conditions below, by the MCData server to obtain unicast bearers with appropriate QoS from the EPS. It utilises the Rx interface of the EPS according to 3GPP TS 23.203 [14].

MCData-5 is not used when the MCData service provider and the PLMN operator do not have an operational agreement for QoS control to be provided directly from the MCData service provider domain.

MCData-5 may be used when the MCData service provider and the PLMN operator have an operational agreement where QoS control is provided directly from the MCData service provider domain.

NOTE: Any coordination between the P-CSCF use of Rx and the MCData server use of Rx (via MCData-5) from the MCData service provider domain is not specified in this release of this specification.

6.4.4.1.4 Reference point MCData-6 (between the MCData server and the EPS)

The MCData-6 reference point, which exists between the MCData server and the EPS, is used to request the allocation and activation of multicast transport resources for MCData application usage. The MCData-6 reference point uses the MB2-C interface as defined in 3GPP TS 29.468 [16]. The MCData-6 reference point also uses the xMB-C interface as defined in 3GPP TS 29.116 [20] for file distribution.

6.4.4.1.5 Reference point IWF-2 (between the interworking function to LMR system and the MCData server)

The IWF-2 reference point is specified in 3GPP TS 23.283 [18].

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.

6.4.4.1.7 Reference point MCData-8 (between the MCData message store and McData server)

The MCData-8 reference point, which exists between the MCData server and the MCData message store, is used by the MCData server to access and manage the MCData message store such as creating MCData user folders and depositing the communications history.

6.4.4.1.8 Reference point MCData-9 (between the MC gateway server and the MC gateway server in a different MCData system)

The MCData-9 reference point, which exists between the MC gateway server and the MC gateway server in an interconnected MCData system for MCData application signalling for establishing MCData sessions, shall use the SIP-3 reference point for transport and routing of signalling. The MCData-9 reference point also carries application data where the data size is too great to be transferred on the signalling plane.

6.4.4.1.9 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.

6.4.4.1.10 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.

6.5 Functional model for short data service

6.5.1 On-network functional model

Figure 6.5.1-1 shows the application plane functional model for SDS.

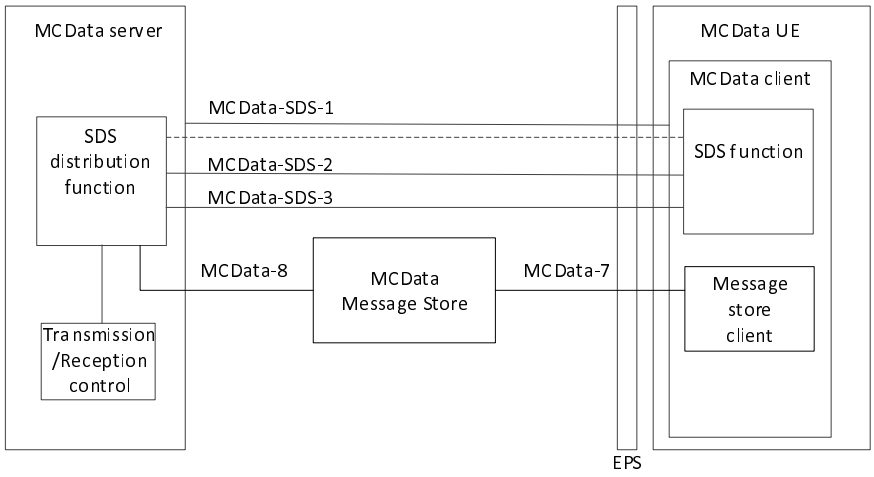

Figure 6.5.1-1: Application plane functional model for SDS

In the model shown in figure 6.5.1-1, the following apply:

- MCData-SDS-1 reference point is primarily used for MCData application signalling during session establishment in support of SDS data transfer. Secondarily, MCData-SDS-1 reference point is used for uplink and downlink unicast SDS data transaction over signalling control plane by the SDS distribution function of the MCData server and SDS function of the MCData client.

- MCData-SDS-2 reference point carries uplink and downlink unicast SDS data over media plane between the SDS distribution function of the MCData server and the SDS function of the MCData client.

- MCData-SDS-3 reference point carries downlink multicast SDS data over media plane from the SDS distribution function of the MCData server to the SDS function of the MCData client.

Examples of SDS data (in the form of text, binary, application data, URL or combinations of these) are:

- information pertaining to applications e.g. health parameters of MCData user for situational awareness application;

- information pertaining to enhanced status service;

- text or URL data between MCData users;

- application data (e.g. health parameters) to the MCData user;

- location information (independent or along with user or application provided data);

- command instructions to invoke certain operations on the MCData UE e.g. invoking UE specific applications; and

- application plane identities for the MCData user and MCData application.

6.5.2 Off-network functional model

Figure 6.5.2-1 shows the off-network application plane functional model for SDS.

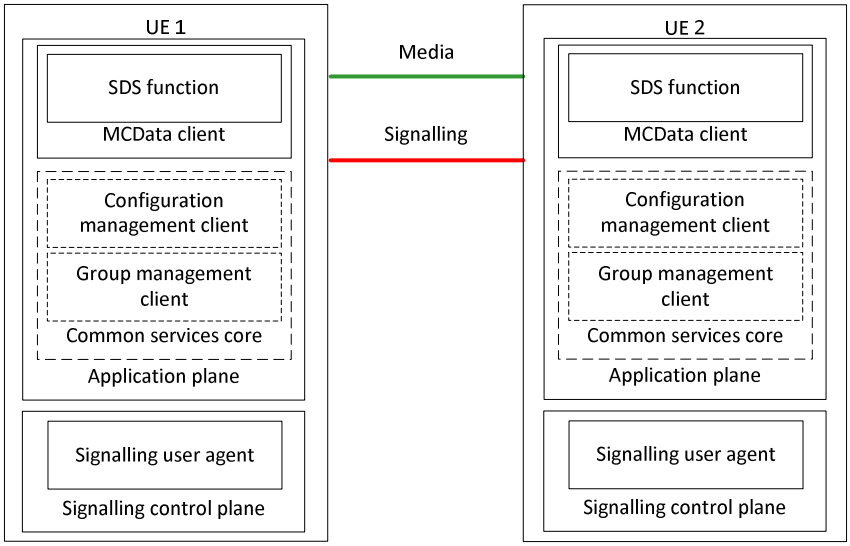

Figure 6.5.2-1: Application plane functional model for SDS

6.5.3 Functional entities description

6.5.3.1 Application plane

6.5.3.1.1 SDS function

SDS function of the MCData client is responsible to handle SDS capability related requests and responses.

6.5.3.1.2 SDS distribution function

The SDS distribution function of the MCData server is responsible for the SDS data transaction to MCData communication participants. The SDS distribution function of the MCData server provides the following functionality:

- reception of uplink SDS data transaction by means of the MCData-SDS-1 and MCData-SDS-2 reference points;
- replicate the SDS data as needed for distribution to those MCData communication participants using unicast transport;
- distribute downlink data by IP unicast transmission to those MCData communication participants utilizing unicast transport by means of the MCData-SDS-1 and MCData-SDS-2 reference points; and
- distribute downlink SDS data using multicast downlink transport by means of the MCData-SDS-3 reference point.

6.5.3.1.3 Transmission/Reception control

This functional entity is responsible for transmission and reception control of MCData SDS data transaction between the sending MCData UE, the MCData server, and the receiving MCData UE. For SDS capability, due to small data size, the SDS messages can be automatically sent.

6.5.3.2 Signalling control plane

The description of the signalling control plane is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.5.4 Reference points

6.5.4.1 Application plane

6.5.4.1.1 Reference point MCData-SDS-1 (between the SDS distribution function and the SDS function)

MCData-SDS-1 reference point is used for uplink and downlink unicast SDS data transaction over signalling control plane by the SDS distribution function of the MCData server and SDS function of the MCData client. This reference point is also used for MCData application signalling during session establishment in support of SDS data transfer.

The MCData-SDS-1 reference point shall use the SIP-1 and SIP-2 reference points for transport and routing of SIP signalling. MCData-SDS-1 reference point can be used when the SDS payload data size does not exceed the configured maximum payload data size for SDS over signalling control plane, otherwise MCData-SDS-2 and MCData-SDS-3 may be used appropriately.

Reference point MCData-SDS-1 also provides support to delivered and read requests and notifications as appropriate.

6.5.4.1.2 Reference point MCData-SDS-2 (unicast between the SDS distribution function and the SDS function)

The MCData-SDS-2 reference point, which exists between the SDS distribution function and the SDS function of the MCData client, is used unicast SDS data transaction (when the SDS payload data size exceeds the configured maximum payload data size for SDS over signalling control plane) between the MCData server and the MCData client. The MCData-SDS-2 reference point uses the SGi reference point defined in 3GPP TS 23.002 [10].

Reference point MCData-SDS-2 also provides support to message thread indication using conversation identifier, delivered and read notifications as appropriate.

6.5.4.1.3 Reference point MCData-SDS-3 (multicast between the SDS distribution function and the SDS function)

The MCData-SDS-3 reference point, which exists between the SDS distribution function of the MCData server and the SDS function of the MCData client, is used by the SDS distribution function of the MCData server to send downlink multicast SDS data to the SDS function of the MCData client. The MCData-SDS-3 reference point uses the MB2-U interface defined in 3GPP TS 23.468 [8].

6.5.4.2 Signalling control plane

The description of the signalling control plane reference points is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.6 Functional model for file distribution

6.6.1 On-network functional model

Figure 6.6.1-1 shows the application plane functional model for file distribution.

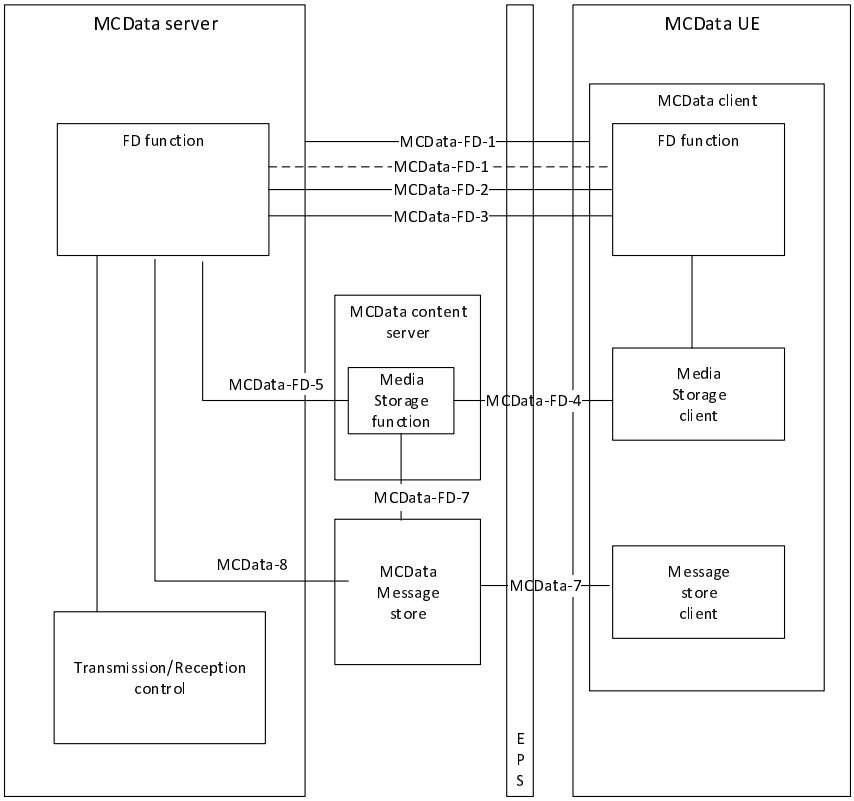

Figure 6.6.1-1: Application plane functional model for file distribution

In the model shown in figure 6.6.1-1, the following apply:

- MCData-FD-1 reference point is primarily used for MCData application signalling for establishing a session in support of MCData file distribution. Secondarily, MCData-FD-1 reference point is also used for both uplink and downlink unicast data (e.g., URL associated to file, file download completed report).

- MCData-FD-2 reference point carries uplink and downlink unicast file data between the FD functions of the MCData server and the MCData UE.

- MCData-FD-3 reference point carries downlink multicast file data from the FD function of the MCData server to the FD function of the MCData UE.

- MCData-FD-4 reference point carries uplink and downlink unicast file data between the media storage function of the MCData Content server and the media storage client of the MCData UE.

- MCData-FD-5 reference point supports the MCData server to access the stored files in the MCData content server for certain file distribution functions, such as retrieval a file to be distributed through multicast etc. This reference points also supports any necessary operational requirements.

- MCData-FD-7 reference point supports the upload and download of file data between MCData content server and MCData message store.

NOTE: The security aspects of MCData-FD-5 and MCData-FD-7 reference points are the responsibility of SA3 and thus outside the scope of the present document.

6.6.1a On-network functional model for interconnection

Figure 6.6.1a-1 shows the application plane functional model for file distribution with interconnection.

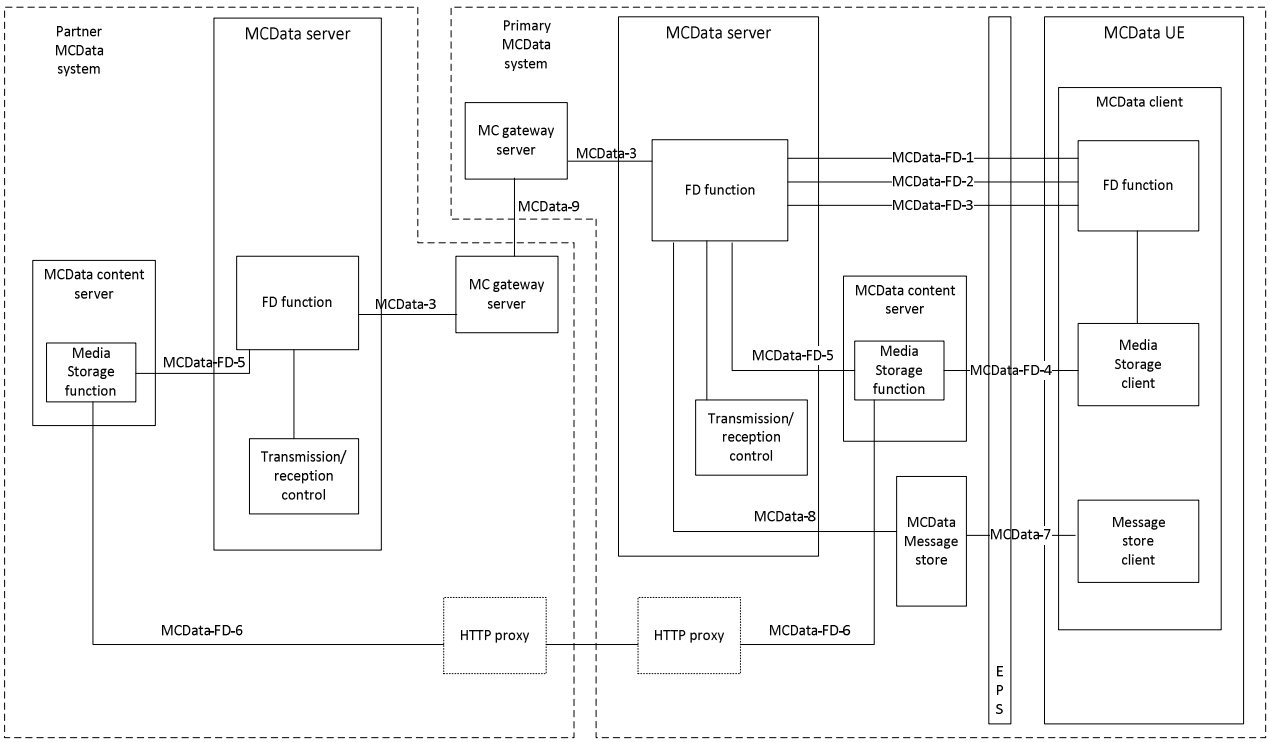

Figure 6.6.1a-1: Application plane functional model for file distribution

In the model shown in figure 6.6.1a-1, the following apply:

- MCData-FD-1, MCData-FD-2, MCData-FD-3, MCData-FD-4, MCData-FD-5 reference points are described in subclause 6.6.1.
- MCData-7 and MCData-8 reference points are described in subclause 6.4.4.1.
- The MC gateway server is described in subclause 6.4.3.1.5.
- MCData-3 and MCData-9 allow the MCData server in the primary MCData system to share URLs related to files for upload and download with the MCData server in the partner MCData system.
- MCData-FD-6 allows file contents and metadata to be shared between the MCData content server in the primary MCData system and the MCData content server in the partner MCData system. MCData-FD-6 is based on HTTP.
- The HTTP proxies are contained in the signalling plane. They provide topology and IP address hiding between MCData systems.

6.6.2 Off-network functional model

Figure 6.6.2-1 shows the off-network application plane functional model for FD.

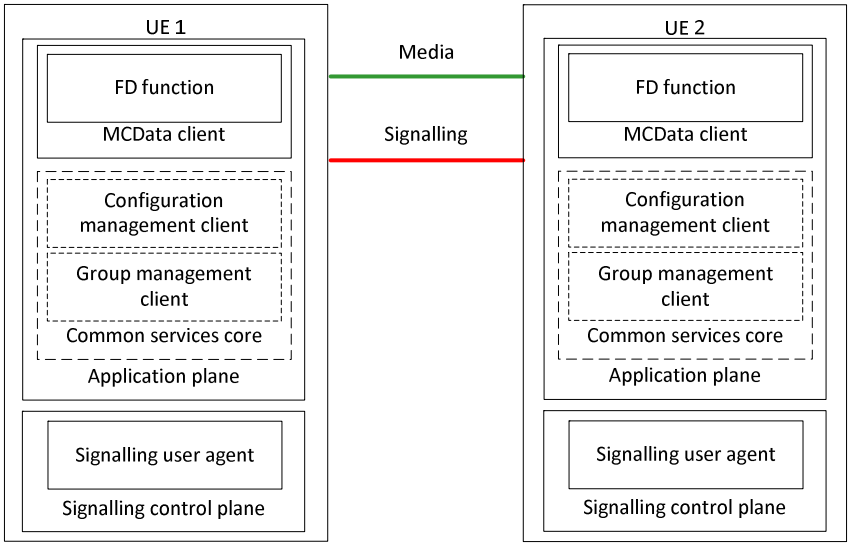

Figure 6.6.2-1: Application plane functional model for FD

6.6.3 Functional entities description

6.6.3.1 Application plane

6.6.3.1.1 FD function

FD function of the MCData client and the MCData server is responsible to handle file distribution capability related requests and responses.

The FD function of the MCData server is responsible for the distribution of file to the MCData communication participants. The FD function of the MCData server provides the following functionality:

- reception of uplink file data by means of the MCData-FD-2 reference point;
- replicate the file data as needed for distribution to those MCData communication participants using unicast transport;
- distribute downlink file data by IP unicast transmission to those MCData communication participants utilizing unicast transport by means of the MCData-FD-2 reference point; and
- distribute downlink file data using multicast downlink transport by means of the MCData-FD-3 reference point.

6.6.3.1.2 Media storage client

The media storage client is used to support FD function of the MCData client for file distribution capability. FD function of the MCData client interacts with media storage client for uploading and downloading file to or from the media storage function of the MCData content server.

6.6.3.1.3 Transmission/Reception control

This functional entity is responsible for transmission and reception control of MCData file data between the sending MCData UE, the MCData server, and the receiving MCData UE. Transmission and reception control function is used to provide arbitration between multiple data requests and apply the necessary policy to ensure that appropriate data is transmitted between the MCData UE. However, when the file distribution requests are exceeding a certain size, it may be necessary to control the data that is transmitted or received by the MCData UEs. The control is subject to criteria like application level priorities (e.g. user priority, group priority), service type, emergency nature of the communication, etc.

6.6.3.1.4 Media storage function

The media storage function is responsible for the storing of media uploaded by the media storage client of the MCData UE in case of MCData file distribution. It also supports download of stored media by the MCData UE in case of file distribution via media storage client.

The media storage function supports partial download requests of stored media by the MCData UE via media storage client.

6.6.3.1.5 MCData content server

The MCData content server functional entity provides a repository area in the MCData trust domain allowing authorized MCData users to temporarily store files that are intended to share to other MCData users. It provides common pool of storage area (i.e. size) to all authorized MCData users to use, no personal space is allocated. An authorized MCData user can use the supported operations on the defined reference point to upload shared files and download the files that are shared to him. The MCData server will use the defined reference point to access the files stored in the MCData content server and support the necessary operational functionalities. As part of the file life cycle management the temporarily stored files will be removed periodically based on the Mission Critical service provider policy. An MCData content server may share files with another MCData content server in another MCData system to support interconnection.

If the MBMS user service architecture described in 3GPP TS 26.346 [21] is utilized for file distribution, the MCData content server provides the stored file associated to the established MBMS session.

NOTE: The security aspects of the MCData content server and its operational supports are the responsibility of SA3 and thus outside the scope of the present document.

6.6.3.2 Signalling control plane

The description of the signalling control plane is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.6.4 Reference points

6.6.4.1 Application plane

6.6.4.1.1 Reference point MCData-FD-1 (between the FD functions of the MCData client and the MCData server)

MCData-FD-1 reference point is used for MCData application signalling for establishing a session in support of MCData file distribution. The bearer is also used for both uplink and downlink unicast data (e.g., URL associated to file, file download completed report). The MCData-FD-1 reference point shall use the SIP-1 and SIP-2 reference points for transport and routing of SIP signalling. MCData-FD-1 reference point can be used as long as the file size does not exceed the capabilities (e.g. payload or transmission limits) provided by MCData-FD-1.

Messages supported on this interface include the uplink and the downlink unicast file transaction between the MCData clients in MCData communication via the MCData server for:

- metadata (file size, type etc.) of the file being distributed;
- URL of the file being distributed;
- sending download completed report;
- small size file;
- conversation identifier for message thread indication; and
- application plane identities for the MCData user and MCData application.

Messages supported on this interface may also include the MCData client providing the MCData server with

- MCData application signalling for establishing a file distribution session in support of MCData communication.

6.6.4.1.2 Reference point MCData-FD-2 (unicast between the FD functions of the MCData client and the MCData server)

The MCData-FD-2 reference point, which exists between the FD functions of the MCData client and the MCData server, is used for unicast file transaction between MCData server and MCData client. The MCData-FD-2 reference point uses the SGi reference point defined in 3GPP TS 23.002 [10].

Reference point MCData-FD-2 supports the following functions:

- file being distributed from and to the MCData client;
- conversation identifier for message thread indication; and
- application plane identities for the MCData user and MCData application.

6.6.4.1.3 Reference point MCData-FD-3 (multicast between the FD functions of the MCData client and the MCData server)

The MCData-FD-3 reference point, which exists between the FD functions of the MCData client and the MCData server, is used by the FD function of the MCData server to send downlink multicast file data to the FD function of the MCData client. The MCData-FD-3 reference point uses the MB2-U interface defined in 3GPP TS 23.468 [8] or the xMB-U interface as defined in 3GPP TS 26.348 [19].

6.6.4.1.4 Reference point MCData-FD-4 (media storage function and media storage client)

The MCData-FD-4 reference point, which exists between the media storage function and the media storage client, is used by the media storage client of MCData UE to upload and download file to the media storage function of the MCData content server. The MCData-FD-4 reference point uses the HTTP reference point.

6.6.4.1.5 Reference point MCData-FD-5 (FD function and media storage function)

The MCData-FD-5 reference point, which exists between FD function and the media storage function, is used by the FD function of MCData server to fetch the file in the MCData content server that was uploaded by the media storage client of a MCData UE for multicast delivery using MBMS. It also supports necessary operational functions such as size check for transmission control etc. The MCData-FD-5 reference point uses the HTTP reference point.

6.6.4.1.6 Reference point MCData-FD-7 (media storage function and MCData message store)

The MCData-FD-7 reference point, which exists between media storage function and the MCData message store, is used by the media storage function to fetch the file residing in the MCData message store and store in its repository for distribution. It is also used by the MCData message store to download the file contents from the media storage function.

6.6.4.2 Signalling control plane

The description of the signalling control plane reference points is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.7 Functional model for data streaming

6.7.1 On-network functional model

NOTE: As no detailed procedures are specified in the current specification the DS functional model is for information only.

Figure 6.7.1-1 shows the application plane functional model for data streaming.

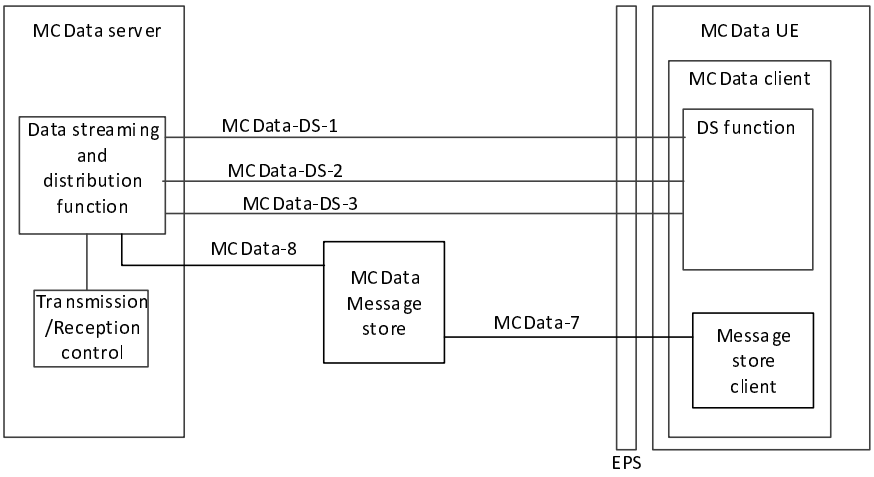

Figure 6.7.1-1: Application plane functional model for data streaming

In the model shown in figure 6.7.1-1, the following apply:

- MCData-DS-1 reference point is used for MCData application signalling for establishing a session in support of MCData data streaming. The bearer is also used for both uplink and downlink unicast stream download reports (e.g. stream start and stop records).
- MCData-DS-2 reference point carries unicast data stream between the data streaming and distribution function of the MCData server and the DS function of the MCData UE. The bearer is used for both uplink and downlink unicast data streaming.
- MCData-DS-3 reference point carries multicast data stream from the data streaming and distribution function of the MCData server to the DS function of the MCData UE. The bearer is used for downlink multicast data streaming.

6.7.2 Off-network functional model

6.7.3 Functional entities description

6.7.3.1 Application plane

6.7.3.1.1 DS function

DS function of the MCData client is responsible to handle DS capability related requests and responses for data streaming. FD function may interact with storage entity for retrieving the locally stored data for data streaming.

6.7.3.1.2 Data streaming and distribution function

The data streaming and distribution function is responsible for the distribution of data stream to MCData communication participants. The data streaming and distribution function provides the following functionality:

- reception of uplink data stream transmission by means of the MCData-DS-2 reference point;
- replicate the data stream as needed for distribution to those MCData communication participants using unicast transport;
- distribute downlink data stream by IP unicast transmission to those MCData communication participants utilizing unicast transport by means of MCData-DS-2 reference point; and
- distribute downlink data stream using multicast downlink transport by means of the MCData-DS-3 reference point.

6.7.3.1.3 Transmission/Reception control

This functional entity is responsible for transmission and reception control of data stream between the sending MCData UE, the MCData server, and the receiving MCData UE. Transmission and reception control function is used to provide arbitration between multiple data requests and apply the necessary policy to ensure that appropriate data is transmitted between the MCData UEs.

6.7.3.2 Signalling control plane

The description of the signalling control plane is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.7.4 Reference points

6.7.4.1 Application plane

6.7.4.1.1 Reference point MCData-DS-1 (between the data streaming and distribution function and the DS function)

MCData-DS-1 reference point is used for MCData application signalling for establishing a session in support of MCData data streaming. The bearer is also used for both uplink and downlink unicast stream download reports (e.g., stream start and stop records). The MCData-DS-1 reference point shall use the SIP-1 and SIP-2 reference points for transport and routing of SIP signalling.

Messages supported on this interface includes the uplink and the downlink unicast data stream between the MCData clients MCData communication via the MCData server for

- metadata of the data being streamed;
- URL of the data being streamed;
- sending stream download report;
- conversation identifier for message thread indication; and
- application plane identities for the MCData user and MCData application.

Messages supported on this interface may also include the MCData client providing the MCData server with

- MCData application signalling for establishing a UE data streaming session in support of MCData communication.

6.7.4.1.2 Reference point MCData-DS-2 (unicast between the data streaming and distribution function and the DS function)

The MCData-DS-2 reference point, which exists between the data streaming and distribution function and the DS function, is used to unicast data stream between the data streaming and distribution function of the MCData server and the DS function of the MCData client. The MCData-DS-2 reference point uses the SGi reference point defined in 3GPP TS 23.002 [10].

MCData-DS-2 supports the following functions:

- stream data from MCData UE;
- stream data from network;
- data stream controls from the authorized MCData UE;
- stream data stream controls from the MCData UE over uplink;
- start and stop data stream from MCData UE over downlink;
- conversation identifier for message thread indication; and

- application plane identities for the MCData user and MCData application.

6.7.4.1.3 Reference point MCData-DS-3 (multicast between the data streaming and distribution function and the DS function)

The MCData-DS-3 reference point, which exists between the data streaming and distribution function and the DS function, is used by the data streaming and distribution function of the MCData server to send multicast data stream to the DS function of the MCData client. The MCData-DS-3 reference point uses the MB2-U interface defined in 3GPP TS 23.468 [8].

6.7.4.2 Signalling control plane

The description of the signalling control plane reference points is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.8 Functional model for IP connectivity

6.8.1 On-network functional model

Figure 6.8.1-1 shows the application plane functional model for User-IP connectivity.

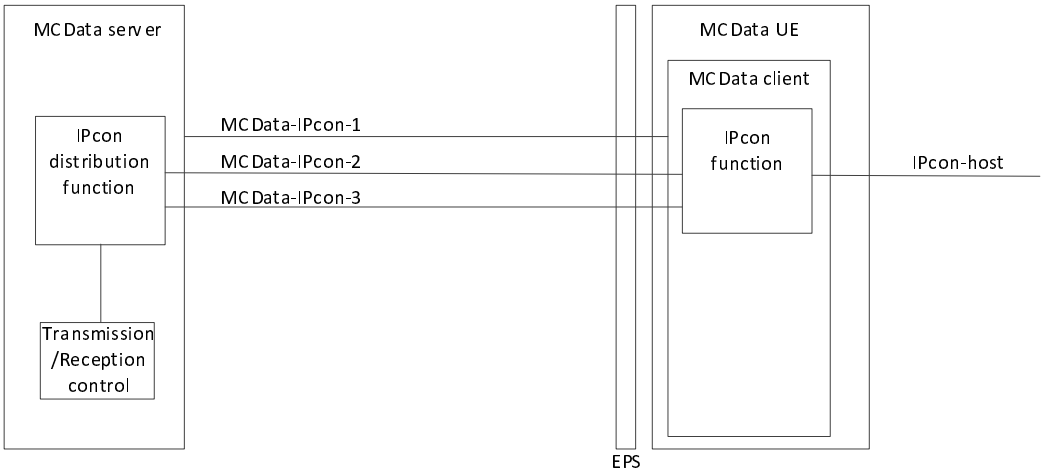

Figure 6.8.1-1: Application plane functional model for IP connectivity

In the model shown in figure 6.8.1-1, the following apply:

- MCData-IPcon-1 reference point is used for MCData application signalling for establishing a session in support of MCData IP connectivity.

- MCData-IPcon-2 reference point carries bidirectional IP Data for point-to-point MCData IP connectivity over the media plane between the U-IPcon distribution function of the MCData server and the IPcon function of the MCData client(s).

- MCData-IPcon-3 reference point is used by the IP-con distribution function of the MCData server to send unidirectional downlink IP Data to the IP-con function of the MCData clients.

- IPcon-host reference point is used for a data host, e.g. server, to use IP connectivity service capabilities. This reference point is outside the scope of the present document.

6.8.2 Off-network functional model

6.8.3 Functional entities description

6.8.3.1 Application plane

6.8.3.1.1 IP connectivity function

IP connectivity function of the MCData client is responsible to handle IPcon capability related requests and responses.

6.8.3.1.2 IPcon distribution function

The IPcon distribution function of the MCData server is responsible for the distribution of IP Data to MCData communication participants. The IPcon distribution function of the MCData server provides the following functionality:

- reception of uplink IP Data transmission by means of the MCData-IPcon-2 reference points;
- replicate the IP Data as needed for distribution to those MCData communication participants using unicast transport;
- distribute downlink data by IP unicast transmission to those MCData communication participants utilizing unicast transport by means of the MCData-IPcon-2 reference points; and
- distribute downlink IP Data using multicast downlink transport by means of the MCData-IPcon-3 reference point.

6.8.3.1.3 Transmission/Reception control

This functional entity is responsible for transmission and reception control of IP Data transaction between the sending MCData client, the MCData server, and the receiving MCData client. Transmission and reception control function is used to provide arbitration between multiple data requests and apply the necessary policy to ensure that appropriate IP Data are transmitted between the MCData clients.

6.8.3.2 Signalling control plane

The description of the signalling control plane is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6.8.4 Reference points

6.8.4.1 Application plane

6.8.4.1.1 Reference point MCData-IPcon-1 (between the IPcon distribution function and the U-IPcon function)

MCData-IPcon-1 reference point is used for MCData application signalling for establishing a session in support of MCData IP connectivity.

6.8.4.1.2 Reference point MCData-IPcon-2 (unicast between the U-IPcon distribution function and the U-IPcon function)

MCData-IPcon-2 reference point carries bidirectional IP Data for point-to-point MCData IP connectivity over the media plane between the IPcon distribution function of the MCData server and the IPcon function of the MCData client(s).

6.8.4.1.3 Reference point MCData-IPcon-3 (multicast between the IPcon distribution function and the IPcon function)

MCData-IPcon-3 reference point carries downlink unidirectional IP Data over the media plane between the IPcon distribution function of the MCData server and the IPcon function of the MCData client(s).

6.8.4.2 Signalling control plane

The description of the signalling control plane reference points is contained in the common functional architecture to support MC services as specified in 3GPP TS 23.280 [5].

6A Identities

The MCData service specific identities (e.g. MCData ID, MCData group ID) are described in clause 8 of 3GPP TS 23.280 [5].

6B Application of functional model to deployments

The application of the functional model to deployments, and description of various deployment scenarios for the MCData service, can be found in clause 9 of 3GPP TS 23.280 [5].

7 Procedures and information flows

7.1 MCData service configuration

The MCData service shall support the procedures and related information flows as specified in subclause 10.1 and Annex A of 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCData client;
- The MC service server is the MCData server;
- The MC service ID is the MCData ID; and
- The MC service user profile index is the MCData user profile index.

7.2 Affiliation and de-affiliation to/from MCData group(s)

The MCData service shall support the procedures and related information flows as specified in subclause 10.8 of 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCData client;
- The MC service server is the MCData server;
- The MC service group is the MCData group;
- The MC service ID is the MCData ID; and
- The MC service group ID is the MCData group ID.

When an MCData user has affiliated to an MCData group then the MCData user can send and receive MCData related media for that MCData group. When an MCData user has de affiliated from an MCData group then the MCData user cannot send and receive MCData related media to and from that MCData group.

7.3 Use of MBMS transmission (on-network)

7.3.1 Information flows for MBMS Transmission

Information flows for generic MBMS procedures are defined in 3GPP TS 23.280 [5].

7.3.2 Use of pre-established MBMS bearers

The MCData service shall support the procedure for using pre-established MBMS bearers as specified in 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCData client;
- The MC service server is the MCData server; and
- The MC service ID is the MCData ID.

The MCData service shall use the MCData-6, MCData-SDS-1, MCData-SDS-2, MCData-SDS-3, MCData-FD-1, MCData-FD-3, MCData-DS-1 and MCData-DS-3 reference points for this procedure.

MCData may use pre-established MBMS bearer for the MCData features short data service, file distribution and data streaming. The MBMS bearer can be used by any group. Depending on the capacity of the MBMS bearer, the bearer can be used to broadcast one or more services in parallel.

Both the media packets as well as application level control signalling (e.g. transmission control) to the receiving users may be sent on the MBMS bearer. Optionally, a separate MBMS bearer could be used for the application level control signalling (e.g. transmission control), due to different bearer characteristic requirements.

7.3.3 Use of dynamic MBMS bearer establishment

The MCData service shall support the procedure for using dynamic MBMS bearers as specified 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCData client;
- The MC service server is the MCData server; and
- The MC service ID is the MCData ID.

The MCData service shall use the MCData-6, MCData-SDS-1, MCData-SDS-3, MCData-FD-1, MCData-FD-3, MCData-DS-1 and MCData-DS-3 reference points for this procedure.

MCData may use dynamic MBMS bearer for the MCData features short data service, file distribution and data streaming. The MBMS bearer can be used by any group. Depending on the capacity of the MBMS bearer, the bearer can be used to broadcast one or more services in parallel.

Both the media packets as well as application level control signalling (e.g. transmission control) to the receiving users may be sent on the MBMS bearer. Optionally, a separate MBMS bearer could be used for the application level control signalling (e.g. transmission control), due to different bearer characteristic requirements.

7.3.4 Switching from MBMS bearer to unicast bearer

The MCData service shall support the procedure for switching from MBMS bearer to unicast bearer as specified 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCData client;
- The MC service server is the MCData server; and
- The MC service ID is the MCData ID.

The MCData service shall use the MCData-SDS-1, MCData-SDS-2, MCData-FD-1, MCData-FD-3, MCData-DS-1 and MCData-DS-3 reference points for this procedure.

7.3.5 Use of MBMS user services for file distribution

7.3.5.1 General

This subclause defines information flows and procedures for usage of MBMS user services that applies to MCData file distribution. MBMS user services can be used for any MC service group.

The MBMS user service architecture is described in 3GPP TS 26.346 [21].

NOTE: The current specification does not cover MCData end-to-end encryption file distribution using MBMS when the BM-SC is in the MCData system trust domain.

7.3.5.2 Information flows for MBMS user service usage

7.3.5.2.1 MBMS user service announcement

Table 7.3.5.2.1-1 describes the information flow MBMS bearer announcement from the MCData server to the MCData client.

Table 7.3.5.2.1-1: MBMS user service announcement

Information element	Status	Description
MBMS user service id	M	Id of the MBMS user service
SA file	M	The service announcement file as returned in the create/update session response (subclause 5.4 in 3GPP TS 26.348 [19]) (see NOTE)
Monitoring state	O	The monitoring state is used to control if the client is actively monitoring the reception quality or the MBMS bearer used by the MBMS user service.
Unicast status	O	An indication that the listening status of the unicast bearer is requested.
NOTE: The SA file provides the TMGI, the list of MBMS service area identifiers, the frequency and the delivery parameters.		

7.3.5.3 Procedures for MBMS user service usage

7.3.5.3.1 Use of pre-established MBMS user services

7.3.5.3.1.1 General

In this scenario, the MCData server pre-establishes MBMS user service(s) in certain pre-configured areas before the initiation of a group file distribution. When a user originates a request for a file distribution in one of these areas, the MCData server can use the pre-established MBMS user service(s) for the DL media transmission.

The MBMS user service can be announced prior to the file distribution or within the signalling message for the file distribution.

The MBMS user service does not transmit application level control signalling. An MBMS bearer could be used for the application level control messages according to the generic MBMS procedures defined in 3GPP TS 23.280 [5].

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.

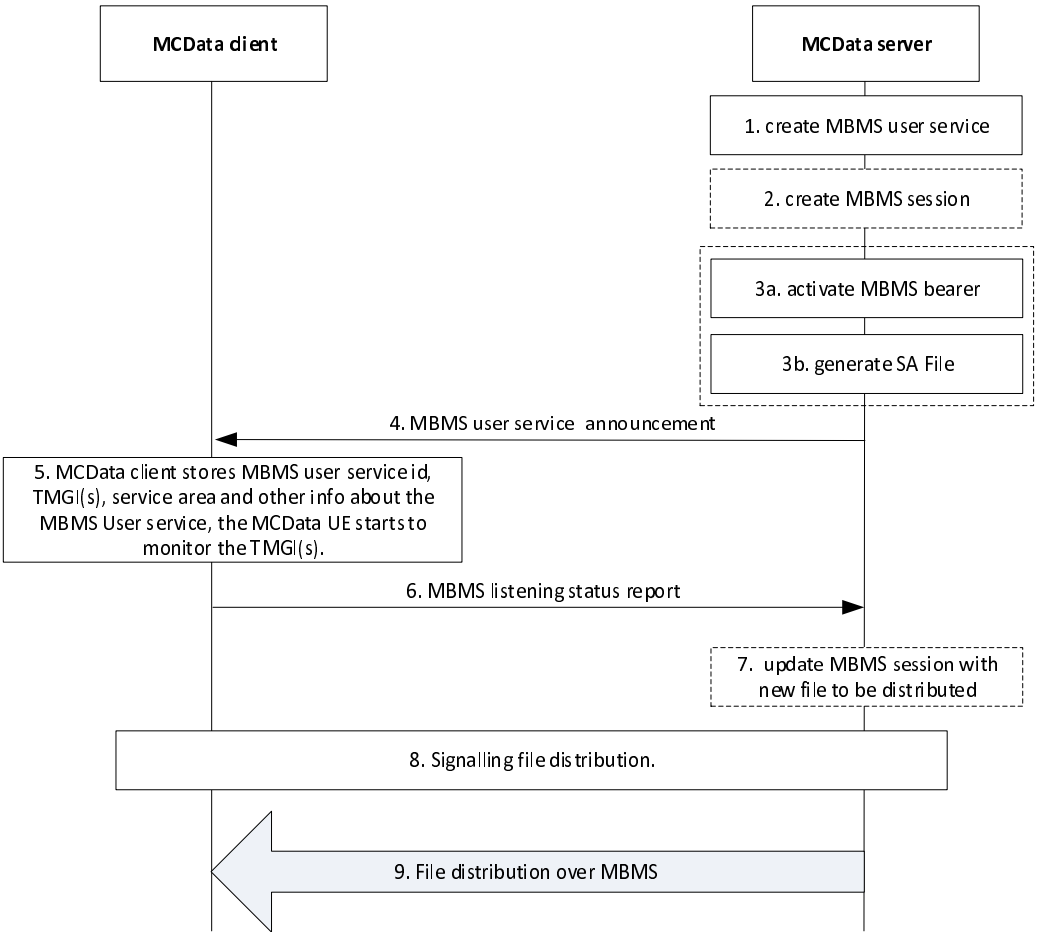

Figure 7.3.5.3.1.2-1: Use of pre-established MBMS user service

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. Additionally, the MCData server defines the ingest mode, pull or push, to provide the file into the BM-SC via xMB-U. 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. When the push ingest mode is used, as part of the response from the BM-SC the MCData server also obtains the URL to be used to push the file.

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 list when the pull ingest mode is defined. As described in 3GPP TS 26.348 [19], the file list includes, among other information, the file URL to be used by the BM-SC to fetch the file and the earliest fetch time.

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

NOTE 4: After step 8, the file can be provided for distribution over the MBMS session. If the pull ingest mode is defined, the BM-SC fetches the file from the indicated file URL. If the push ingest mode is defined, the MCData server can start pushing the file to the corresponding URL.

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.

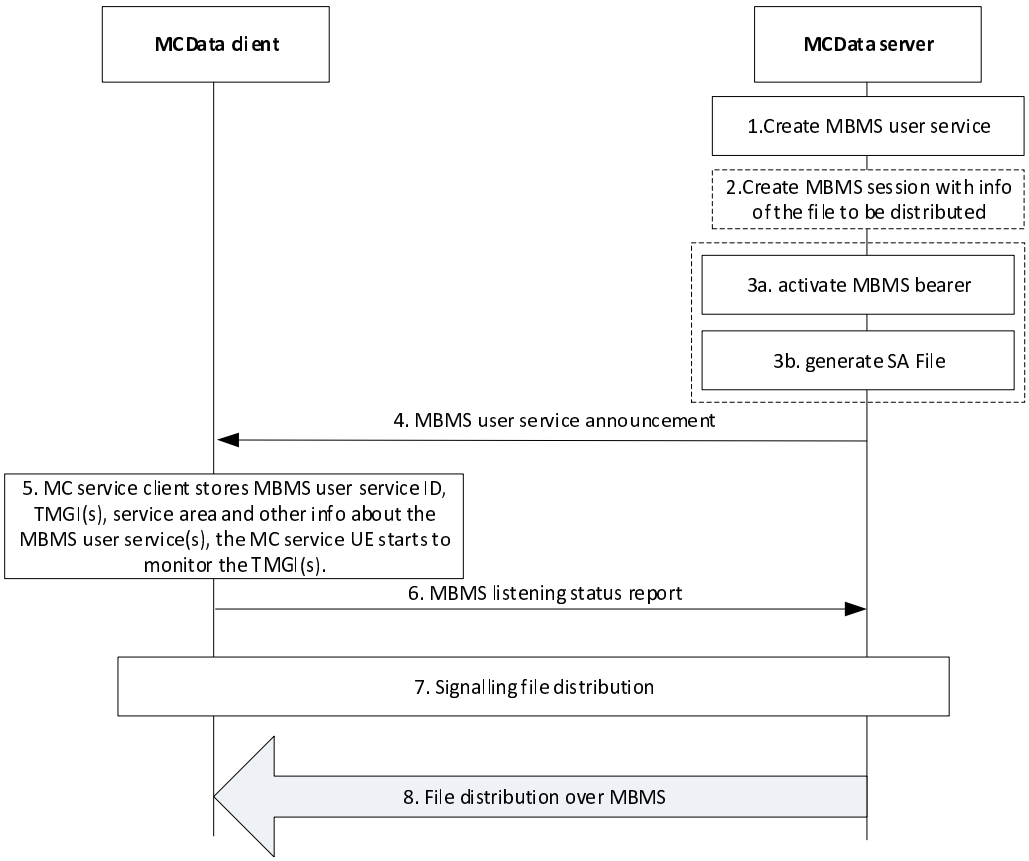

Figure 7.3.5.3.2-1: Use of dynamic MBMS user service establishment

1. The MCData server determines to create a MBMS user service with a given an 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. Additionally, the MCData server defines the ingest mode, pull or push, to provide the file into the BM-SC via xMB-U. When the pull ingest mode is defined, the MCData server provides the file list. The file list includes, among other information, the file URL to be used by the BM-SC to fetch the file and the earliest fetch time. 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. When the pull ingest mode is defined, the MCData server also obtains the scheduling parameter for the file delivery. When the push ingest mode is used, as part of the response from the BM-SC the MCData server obtains the URL to be used to push the file.

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 targeted MCData clients.

NOTE 2: After step 7, the file can be provided for distribution over the MBMS session. If the pull ingest mode is defined, the BM-SC fetches the file from the indicated file URL. If the push ingest mode is defined, the MCData server can start pushing the file to the corresponding URL.

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.

7.3.5.3.3 Providing stored files in the MCData content server for distribution over MBMS

7.3.5.3.3.1 General

As described in clause 6.6.3.1.5, the MCData content server provides a repository area where authorized MCData users temporarily store files that are intended to be shared with other MCData users. The distribution of such files targeting a group of MCData users can be performed over MBMS.

For the case that the MBMS user service architecture is used over the xMB interface (specified in 3GPP TS 26.348 [19]), two ingest modes, push and pull, can be defined by the MCData server to ingest the file into the BM-SC for distribution over the MBMS sessions.

NOTE: It is implementation specific if the MCData server uses pull or push ingest mode to ingest the file into the BM-SC over the xMB interface.

7.3.5.3.3.2 File fetching by the MCData server

A file can be fetched by the MCData server from the MCData content server over the MCData-FD-5 reference point using the file URL provided by MCData users. The MCData server, thus, enables via the xMB-U interface that the file is ingested, either by pull or push, into the BM-SC for distribution over MBMS.

NOTE 1: The file also becomes available for the case that the MCData server decides to distribute the file over the MB2 interface to MCData users from the target MCData group.

When the MCData server defines a pull ingest mode, the MCData server provides via the xMB-C interface the resource location from which the BM-SC will fetch the file as well as other session properties (e.g. file earliest fetch time), as described in 3GPP TS 26.348 [19].

When the MCData server defines a push ingest mode, the MCData server directly ingests into the BM-SC via the xMB-U interface the file obtained from the MCData content server. The BM-SC provides to the MCData server the URL to be used to push the file(s).

NOTE 2: For the push ingest mode, the MCData server is always the functional entity ingesting the file content into the BM-SC via the xMB-U interface.

The procedure in figure 7.3.5.3.3.2-1 describes the case where the file to be distributed over MBMS is fetched by the MCData server from the MCData content server.

Pre-conditions:

- The MCData users on the MCData client 1 to n belong to the same MCData group and are already registered and affiliated for receiving MCData service.
- The file to be distributed is uploaded to the MCData content server.
- The BM-SC has the necessary permissions to fetch a file from the MCData system.

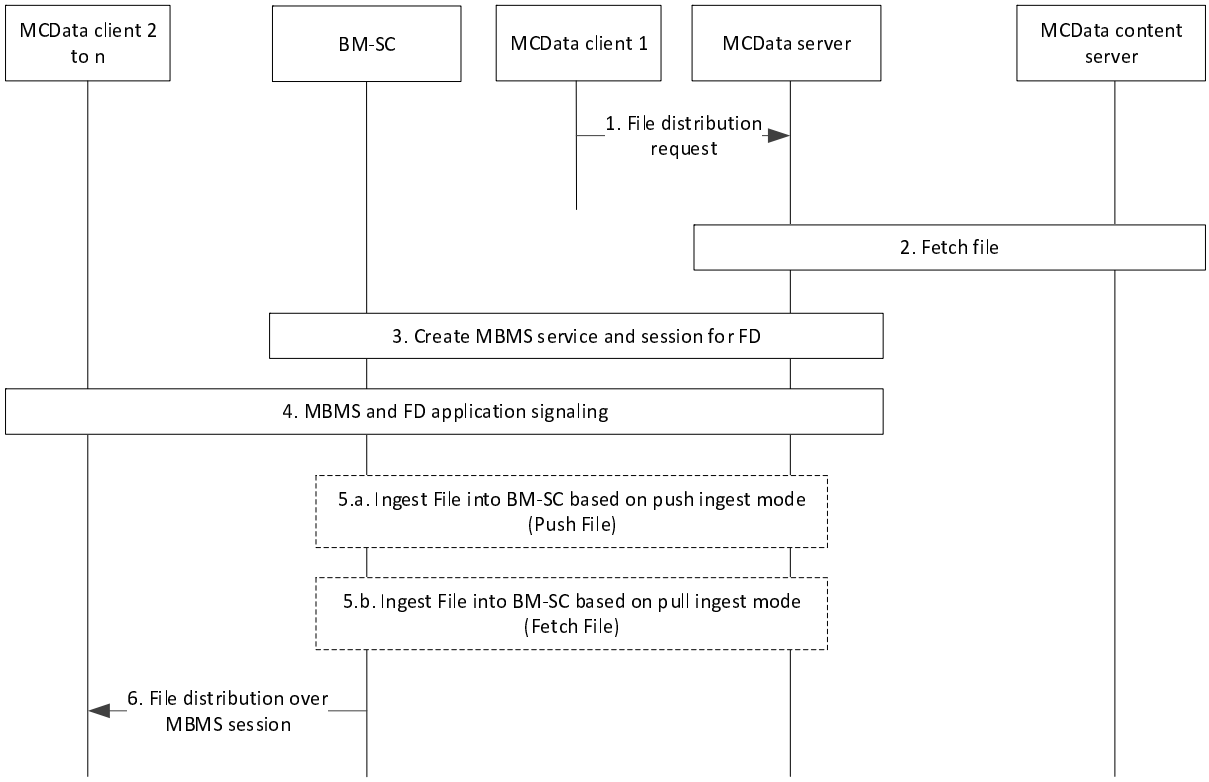

Figure 7.3.5.3.3.2-1: File fetching by the MCData server for file distribution over MBMS

1. The MCData server receives a request from the MCData client 1 to distribute a file to a target MCData group. The MCData file distribution request contains the resource location (i.e. the file URL) in the MCData content server.
2. The MCData server decides to fetch the file from the MCData content server via the MCData-FD-5 reference point.
3. The MCData server creates an MBMS service and session for file delivery using xMB procedures via the xMB-C interface, as described in 3GPP TS 26.348 [19]. The MCData server indicates, among other session properties, the ingest mode. For the case of pull ingest mode, the MCData server provides the file URL from

which the BM-SC will fetch the file. For the case of push ingest mode, the BM-SC provides to the MCData server the URL to be used to push the file into the MBMS session.

NOTE 3: Step 3 may also occur before step 2.

4. The MCData server provides to the MCData users from the target MCData group the application signalling related to the MBMS session and the file distribution.

5a. For the case that the file is ingested into the BM-SC based on the push ingest mode, the MCData server pushes the file to the URL indicated by the BM-SC.

5b. For the case that the file is ingested into the BM-SC based on the pull ingest mode, the BM-SC pulls the file from the provided file URL.

6. The BM-SC distributes the file over the established MBMS session. When the target MCData clients have activated the reception for that service and are located within the MBMS area coverage, the MCData clients receive the file.

7.3.5.3.3.3 File fetching by the BM-SC

When the MCData server defines a pull ingest mode, the MCData server can alternatively provide to the BM-SC the resource location in the MCData content server (i.e. the file URL contained within the received file distribution request). The BM-SC, thus, will directly fetch the file from the MCData content server.

NOTE 1: In order to the enable that the BM-SC fetches the file from the MCData content server, the MCData content server supports the xMB-U interface to the BM-SC.

NOTE 2: For the case that the file is ingested into the BM-SC from the MCData content server, only the pull ingest mode is supported. When push ingest mode is required, the procedure is described in clause 7.3.5.3.3.2.

The procedure in figure 7.3.5.3.3.3-1 describes the case where the file to be distributed over MBMS is fetched by the BM-SC from the MCData content server.

Pre-conditions:

- The MCData users on the MCData client 1 to n belong to the same MCData group and are already registered and affiliated for receiving MCData service.
- The file to be distributed is uploaded to the MCData content server.
- The BM-SC has the necessary permissions to fetch a file from the MCData system.

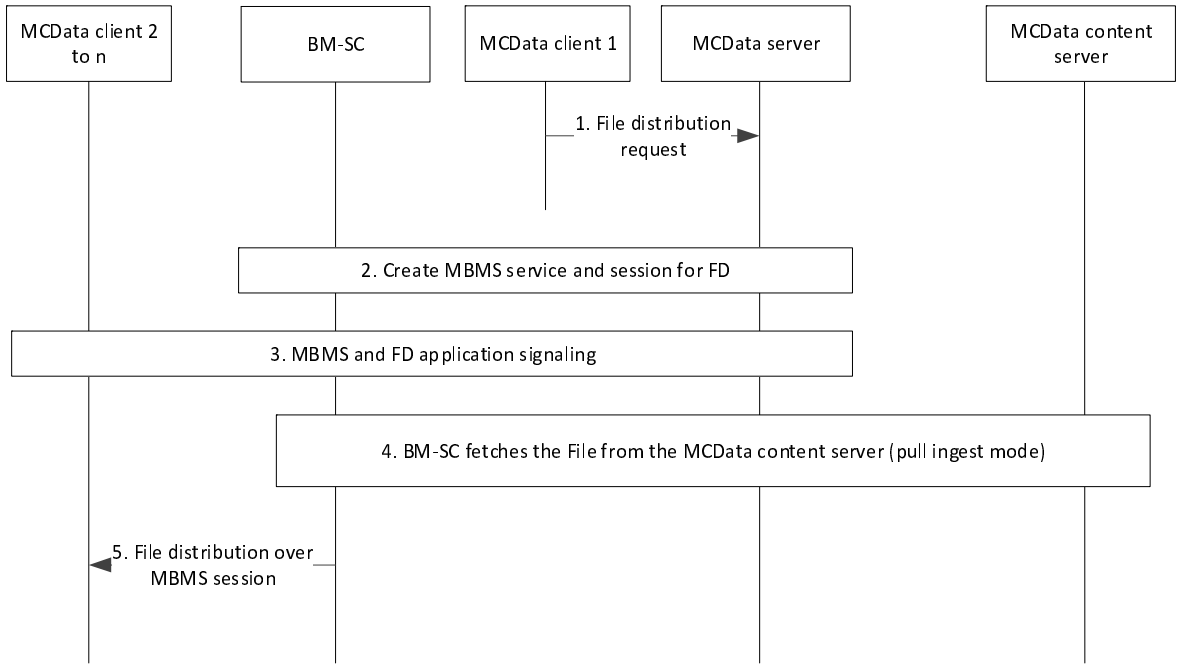

Figure 7.3.5.3.3.3-1: File fetching by the BM-SC for file distribution over MBMS

1. The MCData server receives a request from the MCData client 1 to distribute a file to a target MCData group. The MCData file distribution request contains the resource location (i.e. the file URL) in the MCData content server.
2. The MCData server creates an MBMS service and session for file delivery using xMB procedures via the xMB-C interface, as described in 3GPP TS 26.348 [19]. The MCData server defines, among other session properties, the ingest mode to pull. The MCData server provides the file URL from which the BM-SC will fetch the file from the MCData content server.
3. The MCData server provides to the MCData users from the target MCData group the application signalling related to the MBMS session and the file distribution.
4. The BM-SC fetches the file from the MCData content server via the xMB-U interface.
5. The BM-SC distributes the file over the established MBMS session. When the target MCData clients have activated the reception for that service and are located within the MBMS area coverage, the MCData clients receive the file.

7.4 Short data service

7.4.1 General

There are several procedures how an SDS message can be transported from the sender to the recipient. All of the following factors are used by MCData client for selecting appropriate SDS procedures:

- Whether the data to transfer is within or outside the SDS data size limit to transport over signalling control plane;
- Whether the MCData user has only one SDS transaction or multiple SDS transactions;
- Whether MCData user, optionally using its associated and activated functional alias, is targeting SDS transaction to another MCData user or MCData group;
- Whether MCData UE is on-network or off-network; and
- Security reasons.

7.4.2 Short data service for on-network

The procedures described in the following subclauses are limited to single MCData system only.

7.4.2.1 Information flows for short data service

7.4.2.1.1 MCData standalone data request

Table 7.4.2.1.1-1 describes the information flow for the MCData standalone data request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.1-1: MCData standalone data request (MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData ID (see NOTE 1)	O	The identity of the MCData user towards which the data is sent
Functional alias (see NOTE 1)	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 2)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
Payload	M	SDS content
NOTE 1: Either the MCData ID or the functional alias must be present. NOTE 2: The application identifier shall be included only if the payload destination type indicates that the payload is for application consumption.		

Table 7.4.2.1.1-2: MCData standalone data request (MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData ID	M	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData client consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
Payload	M	SDS content
NOTE: The application identifier shall be included only if the payload destination type indicates that the payload is for application consumption.		

7.4.2.1.2 MCData data disposition notification

Table 7.4.2.1.2-1 describes the information flow for the MCData data disposition notification sent from the MCData client to the MCData server.

Table 7.4.2.1.2-1: MCData data disposition notification

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the notification is sent
MCData ID	M	The identity of the MCData user sending notification
Conversation Identifier	M	Identifies the conversation
Disposition association	M	Identity of the original MCData transaction
Disposition	M	Disposition which is delivered or read or both

7.4.2.1.3 MCData standalone session data request

Table 7.4.2.1.3-1 describes the information flow for the MCData standalone session data request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.3-1: MCData standalone session data request (MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData ID (see NOTE 1)	O	The identity of the MCData user towards which the data is sent
Functional alias (see NOTE 1)	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Standalone transaction
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 2)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Requested Priority	O	Application priority level requested for this communication.
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
NOTE 1: Either the MCData ID or the functional alias must be present. NOTE 2: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.		

Table 7.4.2.1.3-2: MCData standalone session data request (MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData ID	M	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Transaction type	M	Standalone transaction
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
NOTE: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.		

7.4.2.1.4 MCData standalone session data response

Table 7.4.2.1.4-1 describes the information flow for the MCData standalone session data response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.4-1: MCData standalone session data response

Information element	Status	Description
MCData ID	M	The identity of the MCData user receiving data
MCData ID	M	The identity of the MCData user sent data
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected
Establishment reason	M	Reason for establishment or rejection

7.4.2.1.5 MCData session data request

Table 7.4.2.1.5-1 describes the information flow for the MCData session data request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.5-1: MCData session data request (MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData ID (see NOTE 1)	O	The identity of the MCData user towards which the data is sent
Functional alias (see NOTE 1)	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 2)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
NOTE 1: Either the MCData ID or the functional alias must be present. NOTE 2: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.		

Table 7.4.2.1.5-2: MCData session data request (MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData ID	O	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Location	O	Location of the Originating MCData user sending the SDS message
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Application identifier (see NOTE)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
NOTE: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.		

7.4.2.1.6 MCData session data response

Table 7.4.2.1.6-1 describes the information flow for the MCData session data response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.6-1: MCData session data response

Information element	Status	Description
MCData ID	M	The identity of the MCData user receiving data
MCData ID	M	The identity of the MCData user sent data
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected

7.4.2.1.7 MCData group standalone data request (MCData client – MCData server)

Table 7.4.2.1.7-1 describes the information flow for the MCData group standalone data request (in subclause 7.4.2.5.2) sent from the MCData client to the MCData server.

Table 7.4.2.1.7-1: MCData group standalone data request (MCData client – MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
MCData ID list (see NOTE 4)	O	The specified MCData users who should send a disposition notification message.
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS
Application identifier (see NOTE 3)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
Payload	M	SDS content

NOTE 1: If used, only one of these information elements shall be present.
NOTE 2: This information element may be present only when Emergency indicator is present.
NOTE 3: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.
NOTE 4: If Disposition Type IE is not present, this IE shall not be present. If Disposition Type IE is present but this IE is not, which indicates that all receivers shall respond with disposition notification message.

7.4.2.1.8 MCData group standalone data request (MCData server – MCData client)

Table 7.4.2.1.8-1 describes the information flow for the MCData group standalone data request (in subclause 7.4.2.5.2) sent from the MCData server to the MCData client.

Table 7.4.2.1.8-1: MCData group standalone data request (MCData server – MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
MCData ID list (see NOTE 4)	O	The specified MCData users who should send disposition notification message.
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS
Application identifier (see NOTE 3)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
Payload	M	SDS content
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: The application identifier shall be included only if the payload destination type indicates that the payload is for application consumption. NOTE 4: If Disposition Type IE is not present, this IE shall not be present. If Disposition Type IE is present but this IE is not, which indicates that all receivers shall respond with disposition notification message.		

7.4.2.1.9 MCData data disposition notification (MCData server – MCData client)

Table 7.4.2.1.9-1 describes the information flow for the MCData data disposition notification(s) sent from the MCData server to the MCData client.

Table 7.4.2.1.9-1: MCData data disposition notification(s) (MCData server – MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the notification is sent
MCData ID	M	The identity of the MCData user sending notification
Conversation Identifier	M	Identifies the conversation
Disposition association	M	Identity of the original MCData transaction
Disposition	M	Disposition which is delivered or read or both

7.4.2.1.9A MCData aggregated data disposition notification

Table 7.4.2.1.9A-1 describes the information flow for the MCData aggregated data disposition notification sent from the MCData server to the MCData client, indicating the result of a request for an SDS delivery to an MCData group.

Table 7.4.2.1.9A-1: MCData aggregated data disposition notification

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the notification is sent
Number of Aggregated Notifications	M	Total number of received individual notifications
Number of "Read" Notifications	O	Number of MCData users who only reported the “read” disposition
Number of “Delivered” Notifications	O	Number of MCData users who only reported the “delivered” disposition
Conversation Identifier	M	Identifies the conversation
Disposition association	M	Identity of the original MCData transaction
“Read” MCData ID list	O	List, partial or full, of MCData users who only reported the “read” disposition
“Delivered” MCData ID list	O	List, partial or full, of MCData users who only reported the “delivered” disposition

7.4.2.1.10 MCData group session standalone data request (MCData client – MCData server)

Table 7.4.2.1.10-1 describes the information flow for the MCData group session standalone data request (in subclause 7.4.2.6.2) sent from the MCData client to the MCData server.

Table 7.4.2.1.10-1: MCData group session standalone data request (MCData client – MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Standalone transaction
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 3)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI, attached data hosts)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption or IP data in IP connectivity sessions are for data host consumption.		

7.4.2.1.11 MCData group session standalone data request (MCData server – MCData client)

Table 7.4.2.1.11-1 describes the information flow for the MCData group session standalone data request (in subclause 7.4.2.6.2) sent from the MCData server to the MCData client.

Table 7.4.2.1.11-1: MCData group session standalone data request (MCData server – MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Standalone transaction
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 3)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI, attached data hosts)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption or IP data in IP connectivity sessions are for data host consumption.		

7.4.2.1.12 MCData group session standalone data response

Table 7.4.2.1.12-1 describes the information flow for the MCData group standalone data response (in subclause 7.4.2.6.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.12-1: MCData group session standalone data response

Information element	Status	Description
MCData ID	M	The identity of the MCData user receiving data
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user sent data
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected

7.4.2.1.13 MCData group data request (MCData client – MCData server)

Table 7.4.2.1.13-1 describes the information flow for the MCData group data request sent from the MCData client to the MCData server.

Table 7.4.2.1.13-1: MCData group data request (MCData client – MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 3)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.		

7.4.2.1.14 MCData group data request (MCData server – MCData client)

Table 7.4.2.1.14-1 describes the information flow for the MCData group data request sent from the MCData server to the MCData client.

Table 7.4.2.1.14-1: MCData group data request (MCData server – MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
Functional alias	O	The associated functional alias of the MCData user sending data.
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the recipient MCData user
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Location	O	Location of the Originating MCData user sending the SDS message
Application identifier (see NOTE 3)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer	M	Media parameters offered
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption.		

7.4.2.1.15 MCData group data response

Table 7.4.2.1.15-1 describes the information flow for the MCData group data response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.15-1: MCData group data response

Information element	Status	Description
MCData ID	M	The identity of the MCData user receiving data
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user sent data
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected

7.4.2.1.16 MCData one-to-one SDS communication upgrade request

Table 7.4.2.1.16-1 describes the information flow for the MCData one-to-one SDS communication upgrade request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.16-1: MCData one-to-one SDS communication upgrade request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data (when initiated by MCData client); The identity of the MCData user receiving data (when initiated by MCData server).
Functional alias	O	The associated functional alias of the MCData user sending data or receiving data.
Conversation Identifier	M	Identifies the conversation
Emergency indicator	M	Indicates that the data request is for MCData emergency communication

7.4.2.1.17 MCData one-to-one SDS communication upgrade response

Table 7.4.2.1.17-1 describes the information flow for the MCData one-to-one SDS communication upgrade response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.17-1: MCData one-to-one SDS communication upgrade response

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data (when initiated by MCData client); The identity of the MCData user receiving data (when initiated by MCData server).
Conversation Identifier	M	Identifies the conversation

7.4.2.1.18 MCData group SDS communication upgrade request

Table 7.4.2.1.18-1 describes the information flow for the MCData group SDS communication upgrade request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.18-1: MCData group SDS communication upgrade request (MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending upgrade request
Functional alias	O	The associated functional alias of the MCData user sending data or receiving data.
MCData group ID	M	The MCData group ID on which the emergency upgrade request is made
Conversation Identifier	M	Identifies the conversation
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

Table 7.4.2.1.18-2: MCData group SDS communication upgrade request (MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending upgrade request
Functional alias	O	The associated functional alias of the MCData user sending data or receiving data.
MCData group ID	M	The MCData group ID on which the emergency upgrade request is made
MCData ID	M	The identity of the MCData user receiving the upgrade request
Conversation Identifier	M	Identifies the conversation
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

7.4.2.1.19 MCData group SDS communication upgrade response

Table 7.4.2.1.19-1 describes the information flow for the MCData group SDS communication upgrade response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.19-1: MCData group SDS communication upgrade response

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data (when initiated by MCData client); The identity of the MCData user receiving data (when initiated by MCData server).
MCData group ID	M	The MCData group ID on which the emergency upgrade request is made
Conversation Identifier	M	Identifies the conversation

7.4.2.1.20 MCData group SDS communication in-progress priority state cancel request

Table 7.4.2.1.20-1 describes the information for the MCData group SDS communication in-progress priority state cancel request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.4.2.1.20-1: MCData group SDS communication in-progress priority state cancel request (MCData client to MCData server)

Information Element	Status	Description
MCData ID	M	The identity of the cancelling party
MCData group ID	M	The MCData group ID on which the MCData in-progress emergency state is to be cancelled.
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Conversation Identifier	M	Identifies the conversation
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

Table 7.4.2.1.20-2 MCData group SDS communication in-progress priority state cancel request (MCData server to MCData client)

Information Element	Status	Description
MCData ID	M	The identity of the cancelling party
MCData group ID	M	The MCData group ID on which the MCData in-progress emergency state is to be cancelled.
MCData ID	M	The identity of the recipient MCData user
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Conversation Identifier	M	Identifies the conversation
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

7.4.2.1.21 MCData group SDS communication in-progress priority state cancel response

Table 7.4.2.1.21-1 describes the information flow for the MCData group SDS communication in-progress priority state cancel response sent from the MCData server to the MCData client.

Table 7.4.2.1.21-1: MCData group SDS communication in-progress priority state cancel response

Information Element	Status	Description
MCData ID	M	The identity of the cancelling party
MCData group ID	M	The MCData group ID on which the MCData in-progress emergency in-progress is to be cancelled.
Conversation Identifier	M	Identifies the conversation

7.4.2.1.22 MCData functional alias resolution response

Table 7.4.2.1.22-1 describes the information flow MCData functional alias resolution response from the MCData server to the MCData client.

Table 7.4.2.1.22-1: MCData functional alias resolution response information elements

Information Element	Status	Description
MCData ID	M	The identity of the MCData user sending the data
MCData ID	M	The corresponding MCData ID of the functional alias resolved by MCData server

7.4.2.2 One-to-one standalone short data service using signalling control plane

7.4.2.2.1 General

A MCData user initiates a standalone SDS data transfer with another MCData user. For the SDS data transfer signalling plane is used. The target MCData user may be addressed using the functional alias that can be shared with other MCData users.

7.4.2.2.2 Procedure

The procedure in figure 7.4.2.2.2-1 describes the case where an MCData user is initiating one-to-one MCData data communication for sending standalone SDS data to other MCData user, with or without disposition request. Standalone refers to sending unidirectional data in one transaction.

Pre-conditions:

1. The SDS payload data size is below the configured maximum payload data size for SDS over signalling control plane.
2. MCData users on MCData client 1 and MCData client 2 are already registered for receiving MCData service.
3. MCData client 1 and MCData client 2 belong to the same MCData system.
4. Optionally, the MCData client may have activated functional alias to be used.
5. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

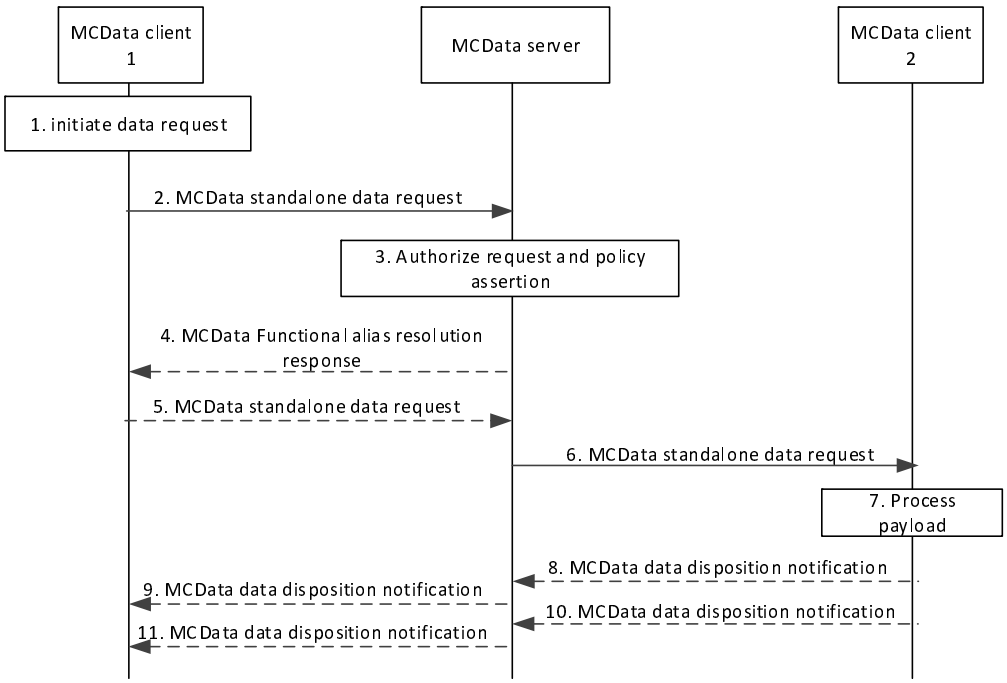

Figure 7.4.2.2.2-1: One-to-one standalone short data service using signalling control plane

1. The user at MCData client 1 initiates an SDS data transfer for the chosen MCData user.
2. MCData client 1 sends a MCData standalone data request towards the MCData server. The MCData standalone data request contains conversation identifier for message thread indication. The MCData standalone data request may include additional implementation specific information in the application metadata container. The MCData standalone data request may contain disposition request if indicated by the user at MCData client 1. MCData user at MCData client 1 may include a functional alias within the SDS data transfer and addresses the target MCData client 2 using a functional alias.

   a) If the MCData user at the MCData client 1 initiates an MCData emergency short data service communication or MCData emergency state is already set for the MCData client 1 (due to previously triggered MCData emergency alert):

      i) The MCData standalone data request shall contain emergency indicator; and

      ii) If MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData standalone data request. MCData server verifies whether the provided functional alias of MCData client 1, if present, can be used and has been activated for the user. The MCData server also checks whether any policy is to be asserted to

limit certain types of message or content to certain members due, for example, to location or user privilege or affiliation. If functional alias is used to address that target MCData user, the MCData server resolves the functional alias to the corresponding MCData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6. The MCData server allows only two participating MCData clients for a standalone short data service.

NOTE 2: The MCData server prioritizes the MCData emergency communication over the other MCData communication. How the MCData server prioritizes MCData emergency communication is not in the scope of the present document.

NOTE 3: If the MCData server detects that the functional alias used as the target of the SDS data transfer request is simultaneously active for multiple MCData users, then the MCData server can proceed by selecting an appropriate MCData ID based on some selection criteria. The selection of an appropriate MCData ID is left to implementation. These selection criteria can include rejection of the SDS data transfer request, if no suitable MCData ID is selected.4. The MCData server responds back to MCData client 1 with a functional alias resolution response message that contains the resolved MCData ID.

5. If the MCData server replies with a MCData functional alias resolution response message, the MCData client 1 sends a new MCData standalone data request towards the resolved MCData ID.

6. MCData server initiates the MCData standalone data request towards the MCData user that is determined based on step 3. The MCData standalone data request towards the MCData user contains the emergency indicator if it is present in the received MCData standalone data request from MCData client 1.

NOTE 4: MCData client 2 does not set its emergency state as a result of receiving the MCData standalone data request containing the emergency indicator.

7. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData client 2 may be notified. Otherwise if the payload is not for MCData user consumption, then the MCData user of MCData client 2 shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCData client 2 which is addressed to a known local non-MCData application that is not yet running shall cause the MCData client 2 to start the local non-MCData application (i.e., remote start application) and shall pass the payload content to the just started application.

8. If the MCData data disposition for delivery was requested by the user at MCData client 1, then the receiving MCData client initiates a MCData data disposition notification for delivery report. The MCData data disposition notification from MCData client may be stored by the MCData server for disposition history interrogation from authorized MCData users.

9. MCData data disposition notification is sent to the disposition requesting user at MCData client 1.

10. If the MCData data disposition for read was requested by the user at MCData client 1, then once the receiving user reads the data, the receiving MCData client 2 initiates a MCData data disposition notification for read report. The MCData data disposition notification from MCData client 2 may be stored by the MCData server for disposition history interrogation from authorized MCData users.

11. MCData data disposition notification is sent to the disposition requesting user at MCData client 1.

7.4.2.3 One-to-one standalone short data service using media plane

7.4.2.3.1 General

A MCData user initiates a standalone SDS data transfer with another MCData user. For the SDS data transfer media plane is used. The target MCData user may be addressed using the functional alias that can be shared with other MCData users.

7.4.2.3.2 Procedure

The procedure in figure 7.4.2.3.2-1 describes the case where an MCData user is initiating one-to-one MCData data communication for sending standalone SDS data to other MCData user, with or without disposition request. Standalone refers to sending unidirectional data in one transaction. The SDS payload data size is assumed to be above the configured maximum payload data size for SDS over signalling control plane.

Pre-conditions:

1. MCData users on MCData client 1 and MCData client 2 are already registered for receiving MCData service.
2. MCData client 1 and MCData client 2 belong to the same MCData system.
3. Optionally, the MCData client may have an activated functional alias to be used.
4. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

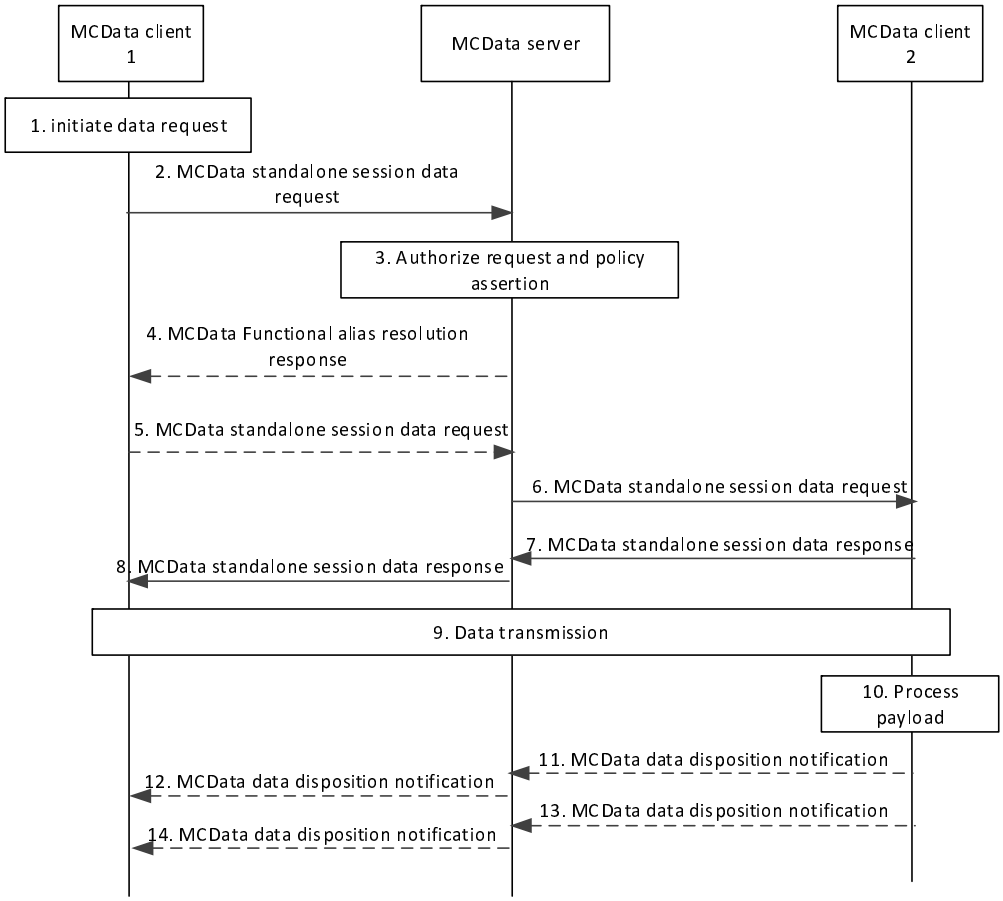

Figure 7.4.2.3.2-1: One-to-one standalone short data service using media plane

1. User at MCData client 1 would like to initiate an SDS data transfer request for the chosen MCData user.
2. MCData client 1 sends a MCData standalone session data request towards the MCData server. The MCData standalone session data request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData standalone session data request contains conversation identifier for message thread indication. The MCData standalone session data request may include additional implementation specific information in the application metadata container. The MCData data request may contain disposition request if indicated by the user at MCData client 1. MCData user at MCData client 1 may include a functional alias within the SDS data transfer and addresses the target MCData client 2 using a functional alias.

   a) If the MCData user at the MCData client 1 initiates an MCData emergency short data service communication or MCData emergency state is already set for the MCData client 1 (due to previously triggered MCData emergency alert):

      i) The MCData standalone session data request shall contain emergency indicator; and

      ii) If MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData standalone session data request. MCData server verifies whether the provided functional alias of MCData client 1, if present, can be used and has been activated for the user. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCData server determines the eligible MCData user(s) after policy assertion for sending the MCData standalone session data request. If functional alias is used to address that target MCData user, the MCData server resolves the functional alias to the corresponding MCData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6. The resulting list contains all associated MCData IDs/MCData users that share this functional alias. The MCData server allows only two participating MCData clients for a standalone short data service.

NOTE 2: The MCData server prioritizes the MCData emergency communication over the other MCData communication. How the MCData server prioritizes MCData emergency communication is not in the scope of the present document.

4. The MCData server responds back to MCData client 1 with a functional alias resolution response message that contains the resolved MCData ID.

NOTE 3: If the MCData server detects that the functional alias used as the target of the MCData standalone session data request is simultaneously active for multiple MCData users, then the MCData server can proceed by selecting an appropriate MCData ID based on some selection criteria. The selection of an appropriate MCData ID is left to implementation. These selection criteria can include rejection of the MCData standalone session data request, if no suitable MCData ID is selected.

5. If the MCData server replies with a MCData functional alias resolution response message, the MCData client 1 sends a new MCData standalone session data request towards the resolved MCData ID.

6. MCData server initiates the MCData standalone session data request towards the MCData users determined. The MCData standalone session data request towards the MCData user contains an emergency indicator if it is present in the received MCData standalone session data request from MCData client 1.

NOTE 4: MCData client 2 corresponds to the MCData user(s) after resolution of the functional alias.

NOTE 5: MCData client 2 does not set its emergency state as a result of receiving the MCData standalone session data request containing the emergency indicator.

7. The receiving MCData client 2 automatically accepts the MCData standalone session data request and responds with MCData standalone session data response towards MCData server.

8. MCData server forwards the MCData client 2 accepted response to the MCData Client 1 initiating the MCData standalone session data request.

9. MCData client 1 and MCData client 2 have successfully established media plane for data communication and the MCData client 1 transmits the SDS data.

10. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData client 2 may be notified. Otherwise if the payload is not for MCData user consumption, then the MCData user of MCData client 2 shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCData client 2 which is addressed to a known local non-MCData application that is not yet running shall cause the MCData client 2 to start the local non-MCData application (i.e., remote start application) and shall pass the payload content to the just started application.

11. If the MCData data disposition for delivery was requested by the user at MCData client 1, then the receiving MCData client initiates a MCData data disposition notification for delivery report. The MCData data disposition notification from MCData client 2 may be stored by the MCData server for disposition history interrogation from authorized MCData users.

12. MCData data disposition notification is sent to the disposition requesting user at MCData client 1.

13. If the MCData disposition for read was requested by the user at MCData client 1, then once the receiving user reads the data, the receiving MCData client 2 initiates a MCData disposition notification for read report. The

MCData data disposition notification from MCData client 2 may be stored by the MCData server for disposition history interrogation from authorized MCData users.

14. MCData data disposition notification is sent to the disposition requesting user at MCData client 1.

7.4.2.4 One-to-one short data service session

7.4.2.4.1 General

A MCData user triggers an establishment of a MCData session with another MCData user for the exchange of SDS data. The target MCData user may be addressed using the functional alias that can be shared with other MCData users.

7.4.2.4.2 Procedure

The procedure in figure 7.4.2.4.2-1 describes the case where an MCData user is initiating data communication session with another MCData user for exchanging at least one SDS data transaction between them, with or without disposition request using MCData-SDS-1 and MCData-SDS-2 or MCData-SDS-3 reference points.

Pre-conditions:

1. MCData users on MCData client 1 and MCData client 2 are already registered for receiving MCData service.
2. Optionally, the MCData client may have activated functional alias to be used.
3. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

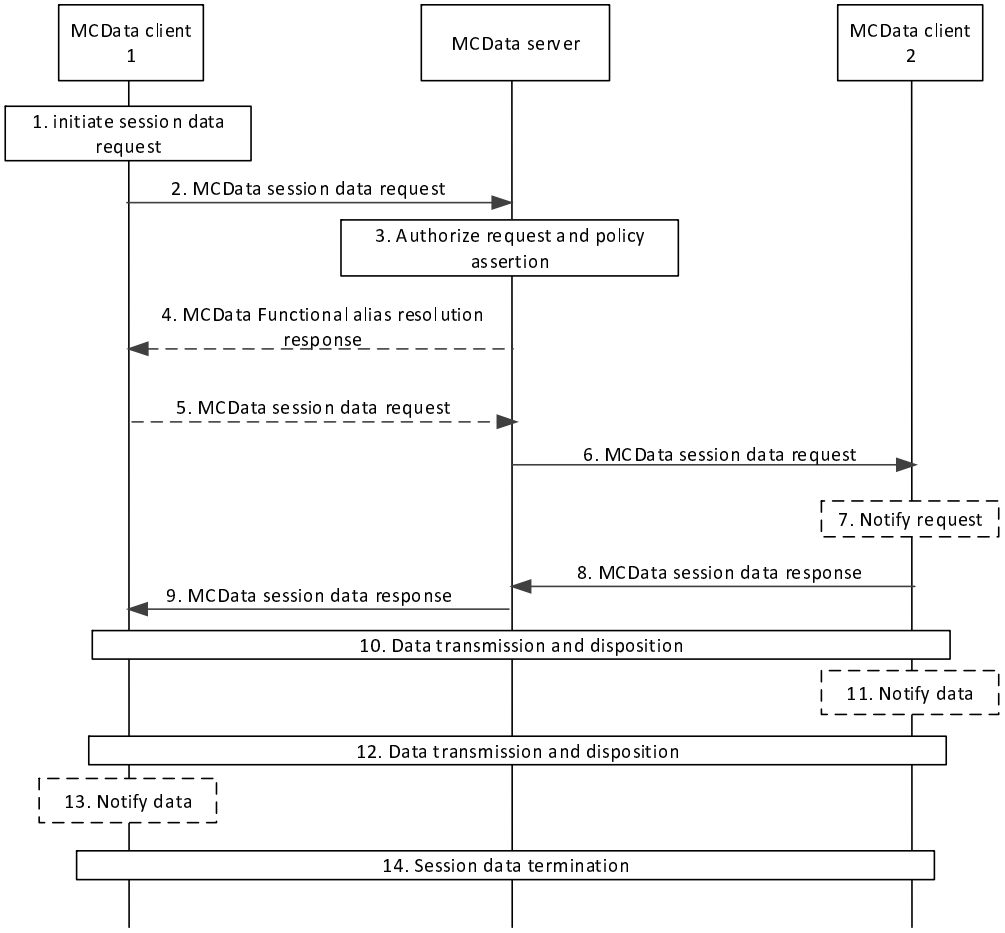

Figure 7.4.2.4.2-1: One-to-one short data service session

1. User at MCData client 1 would like to initiate an SDS data communication session request for the chosen MCData user.

2. MCData client 1 sends a MCData session data request towards the MCData server. The MCData session data request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData session data request contains conversation identifier for message thread indication. The MCData session data request may include additional implementation specific information in the application metadata container. MCData user at MCData client 1 may include a functional alias within the SDS data transfer and addresses the target MCData client 2 using a functional alias.

   a) If the MCData user at the MCData client 1 initiates an MCData emergency short data service communication or MCData emergency state is already set for the MCData client 1 (due to previously triggered MCData emergency alert):

      i) The MCData session data request shall contain emergency indicator; and

      ii) If MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData session data request. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCData server determines the eligible MCData user(s) after policy assertion for sending the MCData session data request. MCData server also verifies whether the provided functional alias of MCData client 1, if present, can be used and has been activated for the user. If functional alias is used to address that target MCData user, the MCData server resolves the functional alias to the corresponding MCData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6. The MCData server allows only two participating MCData clients for a standalone short data service.

NOTE 2: The MCData server prioritizes the MCData emergency communication over the other MCData communication. How the MCData server prioritizes MCData emergency communication is not in the scope of the present document.

NOTE 3: If the MCData server detects that the functional alias used as the target of the MCData session data request is simultaneously active for multiple MCData users, then the MCData server can proceed by selecting an appropriate MCData ID based on some selection criteria. The selection of an appropriate MCData ID is left to implementation. These selection criteria can include rejection of the SDS data transfer request, if no suitable MCData ID is selected.

4. The MCData server responds back to MCData client 1 with a functional alias resolution response message that contains the resolved MCData ID.

5. If the MCData server replies with a MCData functional alias resolution response message, the MCData client 1 sends a new MCData session data request towards the resolved MCData ID.

6. MCData server initiates the MCData session data request towards the MCData users determined. The MCData session data request towards the MCData user contains the emergency indicator if it is present in the received MCData session data request from MCData client 1.

NOTE 4: MCData client 2 corresponds to the MCData user(s) after resolution of the functional alias.

NOTE 5: MCData client 2 does not set its emergency state as a result of receiving the MCData session data request containing the emergency indicator.

7. If the emergency indicator is present, the receiving MCData client 2 notifies the user about the incoming MCData session data request.

8. The receiving MCData client 2 accepts the MCData session data request and responds with MCData session data response towards MCData server.

9. MCData server forwards the MCData client 2 accepted response to the MCData user initiating the MCData session data request.

10. and 11. MCData client 1 and MCData client 2 have successfully established media plane for data communication and either MCData client can transmit SDS data. The MCData data request may contain disposition request if indicated by the client sending data. If MCData data disposition was requested by the user, then the receiving MCData client initiates a MCData data disposition notification for delivery, read reports to the disposition requesting user. The MCData data disposition notification from MCData user may be stored by the MCData server for disposition history interrogation from authorized users.

12. and 13. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData client 2 may be notified, otherwise the MCData user of MCData client 2 shall not be notified.

14. After SDS data transaction is complete, the established media plane is released.

7.4.2.5 Group standalone short data service using signalling control plane

7.4.2.5.1 General

The initiation of a group standalone SDS to a selected group results in affiliated group members receiving the SDS data. The SDS payload data size is assumed to be below the configured maximum payload data size for SDS over signalling control plane.

7.4.2.5.2 Procedure

The procedure in figure 7.4.2.5.2-1 describes the case where an MCData user is initiating group standalone MCData data communication with or without disposition request, to a group.

Pre-conditions:

1. MCData users on MCData clients 1 to n belong to the same group and are already registered for receiving MCData service and affiliated.

2. Optionally, the MCData client may have activated functional alias to be used.

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

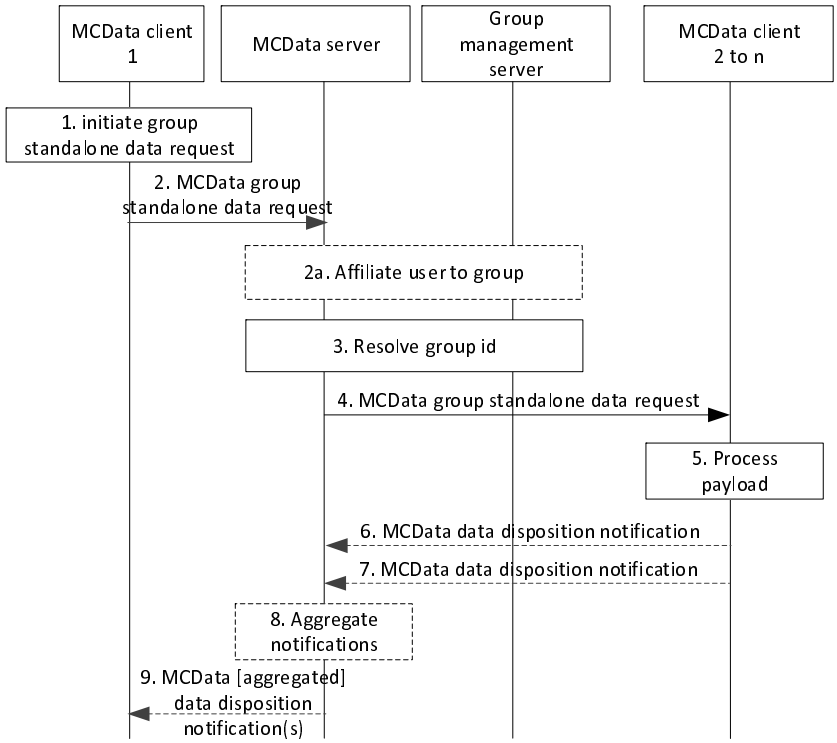

Figure 7.4.2.5.2-1: Group standalone SDS using signalling control plane

1. The user at MCData client 1 initiates an SDS data transfer to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. MCData client 1 sends a MCData group standalone data request towards the MCData server. The MCData group data request contains MCData group ID as selected by the user at MCData client 1. The MCData group standalone data request contains conversation identifier for message thread indication. The MCData session data request may include additional implementation specific information in the application metadata container. The MCData group standalone data request may contain disposition request if indicated by the user at MCData client 1. MCData user at MCData client 1 may include a functional alias within the SDS data transfer.

   If the MCData user at MCData client 1 initiates an MCData emergency short data service communication or the MCData emergency state is already set for the MCData client 1 (due to a previously triggered MCData emergency alert):

   i) the MCData group standalone data request shall contain an emergency indicator;

   ii) the MCData group standalone data request shall set an alert indicator if configured to send an MCData emergency alert while initiating an MCData standalone data request for the emergency short data service communication;

   iii) if the MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCPTT emergency state is retained until explicitly cancelled; and

   iv) once an MCData emergency communication has been initiated, the MCData group is considered to be in an in-progress emergency state until cancelled.

   If the MCData user at MCData client 1 initiates an MCData imminent peril short data service communication:

   i) the MCData group standalone data request shall contain imminent peril indicator; and

   ii) once an MCData imminent peril communication has been initiated, the MCData group is considered to be in an in-progress imminent peril state until cancelled.

2a. If either emergency indicator or imminent peril indicator is present in the received MCData group standalone data request, the MCData server implicitly affiliates MCData client 1 to the MCData group if the client is not already affiliated.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData group standalone data request. The MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege or affiliation. MCData server also verifies whether the provided functional alias, if present, can be used and has been activated for the user.

   i) If an emergency indicator is present in the received MCData group standalone data request and if the MCData group is not in the in-progress emergency state, the MCData group is considered to be in the in-progress emergency state until cancelled; and

   ii) If an imminent peril indicator is present in the received MCData group standalone data request and if the MCData group is not in the in-progress imminent peril state, the MCData group is considered to be in the in-progress imminent peril state until cancelled.

4. MCData server initiates the MCData group standalone data request towards each MCData client determined in Step 3. The MCData ID list shall not be included in a unicast downlink delivery to an individual MCData client. The Disposition Type IE shall not be included in a unicast downlink delivery to MCData clients who are not in the MCData ID list in step 2. The MCData group standalone data request towards each MCData client contains:

   i) an emergency indicator, if it is present in the received MCData group standalone data request from the MCData client 1;

   ii) an imminent peril indicator, if it is present in the received MCData group standalone data request from the MCData client 1; and

   iii) an alert indicator, if requested to initiate an emergency alert in the received MCData group standalone data request from the MCData client 1.

5. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData clients 2 to n may be notified. Otherwise if the payload is not for MCData user consumption, then the MCData user of MCData clients 2 to n shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCData client 2 which is addressed to a known local non-MCData application that is not yet running shall cause the MCData client 2 to start the local non-MCData application (i.e., remote start application) and shall pass the payload content to the just started application.

6. If the MCData data disposition for delivery was requested by the user at MCData client 1, then the receiving MCData client(s) initiates a MCData data disposition notification for delivery report.

7. If the MCData data disposition for read was requested by the user at MCData client 1, then once the receiving user reads the data, the receiving MCData client 2 initiates a MCData data disposition notification for read report.

NOTE 1: On receiving MCData group standalone data request over MBMS, the receiving MCData client(s) shall check if the MCData ID list IE is included the receiving MCData client shall check if its own MCData ID is in the list. If not, step 6 and 7 are not required.

8. The MCData data disposition notification(s) from MCData client may be stored by the MCData server for disposition history interrogation from authorized MCData users. The MCData data disposition notification(s) from each MCData user may be aggregated.

9. Aggregated or individual MCData data disposition notification(s) is sent to the disposition requesting user at MCData client 1.

7.4.2.6 Group standalone short data service using media plane

7.4.2.6.1 General

The initiation of a group standalone SDS to a selected group results in affiliated group members receiving the SDS data. The SDS payload data size is assumed to be above the configured maximum payload data size for SDS over signalling control plane.

7.4.2.6.2 Procedure

The procedure in figure 7.4.2.6.2-1 describes the case where an MCData user is initiating group standalone MCData data communication with or without disposition request to a group.

Pre-conditions:

1. MCData users on MCData client 1 to n belong to the same group and are already registered for receiving MCData service and affiliated.
2. Optionally, the MCData client may have activated functional alias to be used.
3. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

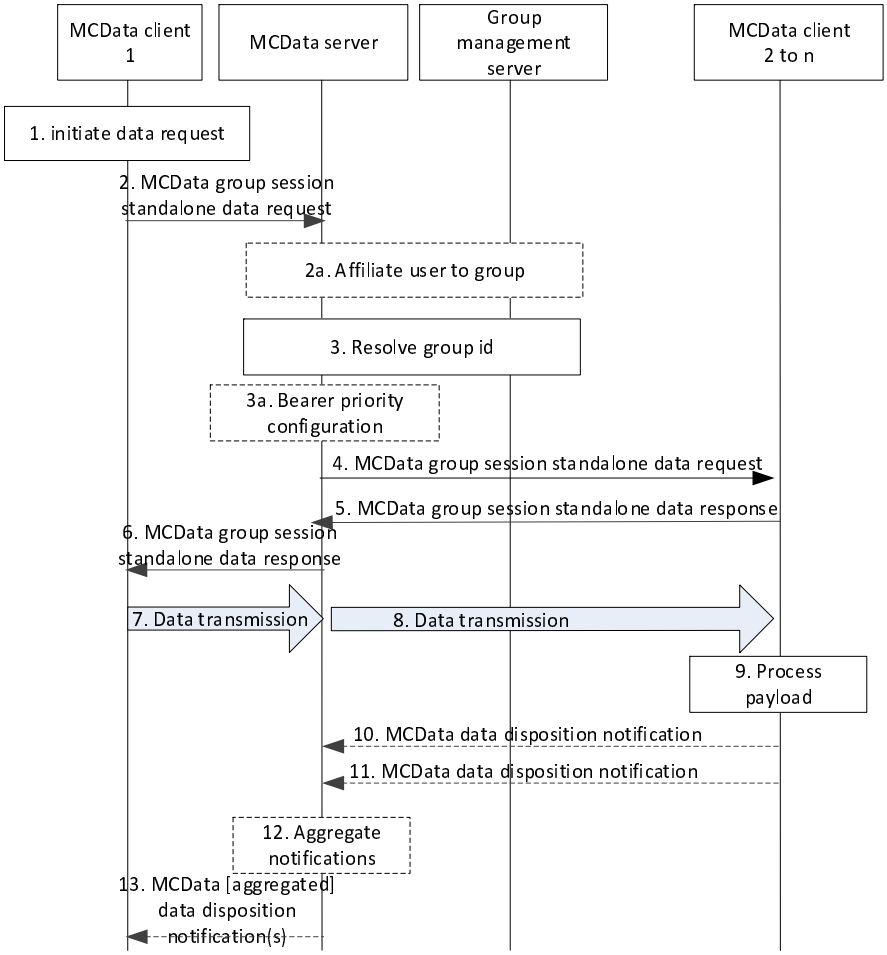

Figure 7.4.2.6.2-1: Group standalone SDS using media plane

1. User at MCData client 1 would like to initiate a SDS data transfer request to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. MCData client 1 sends a MCData group session standalone data request towards the MCData server. The MCData group session standalone data request contains target recipient(s) as selected by the user at MCData client 1. The MCData session group standalone data request contains conversation identifier for message thread indication. The MCData session group standalone data request may include additional implementation specific information in the application metadata container. The MCData session group standalone data request may contain disposition request if indicated by the user at MCData client 1. MCData user at MCData client 1 may include a functional alias within the SDS data transfer.

   If the MCData user at MCData client 1 initiates an MCData emergency short data service communication or the MCData emergency state is already set for MCData client 1 (due to a previously triggered MCData emergency alert):

   i) the MCData group session standalone data request shall contain an emergency indicator;

   ii) the MCData group session standalone data request shall set the alert indicator if configured to send an MCData emergency alert while initiating an MCData standalone data request for the emergency short data service communication;

   iii) if the MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCPTT emergency state is retained until explicitly cancelled; and

   iv) once an MCData emergency communication has been initiated, the MCData group is considered to be in an in-progress emergency state until cancelled.

   If the MCData user at MCData client 1 initiates an MCData imminent peril short data service communication:

   i) the MCData group session standalone data request shall contain an imminent peril indicator; and

   ii) once an MCData imminent peril communication has been initiated, the MCData group is considered to be in an in-progress imminent peril state until cancelled.

2a. If either an emergency indicator or an imminent peril indicator is present in received MCData group session standalone data request, the MCData server implicitly affiliates MCData client 1 to the MCData group if the client is not already affiliated.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData session group standalone data request. The MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCData server also verifies whether the provided functional alias, if present, can be used and has been activated for the user.

   i) if an emergency indicator is present in the received MCData group session standalone data request and if the MCData group is not in the in-progress emergency state, the MCData group is considered to be in the in-progress emergency state until cancelled; and

   ii) if an imminent peril indicator is present in the received MCData group session standalone data request and if the MCData group is not in the in-progress imminent peril state, the MCData group is considered to be in the in-progress imminent peril state until cancelled.

3a. The MCData server configures the priority of the underlying bearers for all participants in the MCData group.

4. MCData server initiates the MCData group session standalone data request towards each MCData user determined in Step 3. The MCData ID list shall not be included in a unicast downlink delivery to an individual MCData client. The Disposition Type IE shall not be included in a unicast downlink delivery to MCData clients who are not in the MCData ID list in step 2. The MCData group session standalone data request towards each MCData client contains:

   i) an emergency indicator, if it is present in the received MCData group session standalone data request from the MCData client 1;

   ii) an imminent peril indicator, if it is present in the received MCData group session standalone data request from the MCData client 1; and

iii) an alert indicator, if requested to initiate an emergency alert in the received MCData group session standalone data request from MCData client 1.

5. The receiving MCData clients 2 to n automatically accepts the MCData group session standalone data request and responds with MCData group standalone data response towards MCData server.

6. MCData server forwards the MCData clients 2 to n accepted response to the MCData user initiating the MCData group session standalone data request.

NOTE 1: Step 6 can occur at any time following step 4, and prior to step 7 depending on the conditions to proceed with the data transmission.

7. MCData client 1 and MCData server have successfully established media plane for data communication and the MCData client 1 transmits the SDS data.

8. MCData server distributes the data received from MCData client 1 to MCData clients 2 to n over the established media plane. After completion of the MCData transfer from MCData client 1, media plane resources associated to the data communication are released.

NOTE 2: MCData server is not required to wait for the complete reception of SDS data from MCData client 1 prior to initiating transmission to MCData client 2 to n.

9. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData client 2 to n may be notified. Otherwise if the payload is not for MCData user consumption, then the MCData user of MCData client 2 to n shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCData client 2 which is addressed to a known local non-MCData application that is not yet running shall cause the MCData client 2 to start the local non-MCData application (i.e., remote start application) and shall pass the payload content to the just started application.

10. If the MCData data disposition for delivery was requested by the user at MCData client 1, then the receiving MCData client(s) initiates a MCData data disposition notification for delivery report.

11. If the MCData data disposition for read was requested by the user at MCData client 1, then once the receiving user reads the data, the receiving MCData client 2 initiates a MCData data disposition notification for read report.

NOTE 3: On receiving MCData group standalone data request over MBMS, the receiving MCData client(s) shall check if the MCData ID list IE is included the receiving MCData client shall check if its own MCData ID is in the list. If not, step 6 and 7 are not required.

12. The MCData data disposition notification(s) from MCData client may be stored by the MCData server for disposition history interrogation from authorized MCData users. The MCData data disposition notification(s) from each MCData user may be aggregated.

13. Aggregated or individual MCData data disposition notification(s) is sent to the disposition requesting user at MCData client 1.

7.4.2.7 Group short data service session

7.4.2.7.1 General

The initiation of a group SDS to a selected group results in affiliated group members exchanging SDS data.

7.4.2.7.2 Procedure

The procedure in figure 7.4.2.7.2-1 describes the case where an MCData user is initiating SDS data communication session with an MCData group for exchanging SDS data transactions between the group participants, with or without disposition request, using MCData-SDS-1 and MCData-SDS-2 reference points.

Pre-conditions:

1. MCData users on MCData client 1 to n belong to the same group and are already registered for receiving MCData service and affiliated.

2. Optionally, the MCData client may have activated functional alias to be used.

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

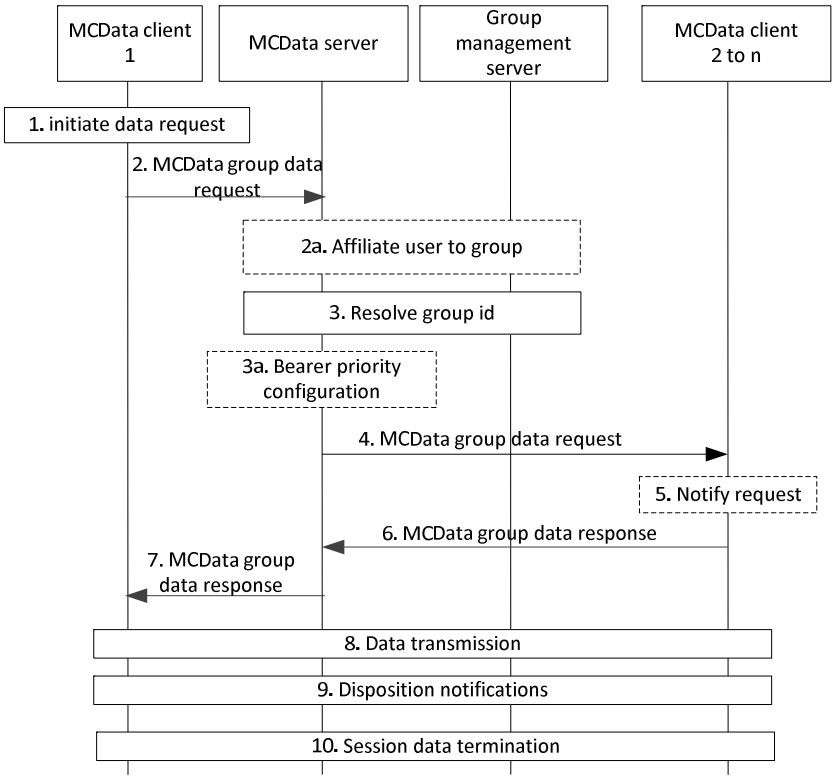

Figure 7.4.2.7.2-1: Group SDS session

1. User at MCData client 1 would like to initiate a SDS group data transfer request to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. MCData client 1 sends a MCData group data request towards the MCData server. The MCData group data request contains MCData group ID as selected by the user at MCData client 1. The MCData session data request contains conversation identifier for message thread indication. The MCData group data request may include additional implementation specific information in the application metadata container. MCData user at MCData client 1 may include a functional alias within the SDS data transfer.

   If the MCData user at MCData client 1 initiates an MCData emergency short data service communication or the MCData emergency state is already set for the MCData client 1 (due to a previously triggered MCData emergency alert):

   i) the MCData group data request shall contain an emergency indicator;

   ii) the MCData group data request shall set an alert indicator if configured to send an MCData emergency alert while initiating an MCData standalone data request for the emergency short data service communication; and

   iii) if MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCPTT emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

If the MCData user at MCData client 1 initiates an MCData imminent peril short data service communication:

i) the MCData group data request shall contain an imminent peril indicator.

2a. If either emergency indicator or imminent peril indicator is present in received MCData group data request, the MCData server implicitly affiliates MCData client 1 to the MCData group if the client is not already affiliated.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData group data request. The MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCData server also verifies whether the provided functional alias, if present, can be used and has been activated for the user.

i) if an emergency indicator is present in the received MCData group data request and if MCData group is not in in-progress emergency state, the MCData group is considered to be in the in-progress emergency state until cancelled;

NOTE 2: While the MCData group is in the in-progress emergency state, all types of MCData communications within the group are processed as emergency group communications by the MCData server. MCData group members that are not in the emergency state do not indicate emergency in group communication requests.

ii) if an imminent peril indicator is present in the received MCData group data request and if the MCData group is not in the in-progress imminent peril, the MCData group is considered to be in the in-progress imminent peril state until cancelled;

3a. The MCData server configures the priority of the underlying bearers for all participants in the MCData group.

4. MCData server initiates the MCData group data request towards each MCData user determined in Step 3. The MCData group data request towards each MCData client contains:

i) an emergency indicator if it is present in the received MCData group data request from the MCData client 1;

ii) an imminent peril indicator if it is present in the received MCData group data request from the MCData client 1; and

iii) an alert indicator if requested to initiate an emergency alert in the received MCData group data request from MCData client 1;

5. The receiving MCData clients 2 to n optionally notify the user about the incoming MCData session data request.

6. The receiving MCData client 2 to n accept or reject the MCData group data request and the corresponding result is in the MCData group data response towards MCData server.

7. MCData server forwards the MCData group data response received from MCData client 2 to n to the MCData user initiating the MCData session data request.

NOTE 3: Step 7 can occur at any time following step 4, and prior to step 8 depending on the conditions to proceed with the data transmission.

8. MCData client 1 and the MCData group data request accepted clients have successfully established media plane for data communication and either MCData client can transmit SDS data. The MCData data request may contain disposition request if indicated by the client sending data. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the SDS data receiving MCData users may be notified, otherwise those MCData users shall not be notified.

9. If MCData data disposition was requested by the user, then the SDS data receiving MCData client initiates a MCData data disposition notification for delivery, read reports to the disposition requesting user. The MCData data disposition notification from the receiving MCData clients may be stored by the MCData server for disposition history interrogation from authorized users.

10. Based on the MCData user action or conditions to release, the established media plane for SDS data exchange is released.

7.4.2.8 One-to-one SDS communication upgrade to an emergency one-to-one SDS communication

7.4.2.8.1 General

This clause is for adding procedures related to upgrading an existing MCData one-to-one SDS communication to an MCData emergency one-to-one SDS communication.

7.4.2.8.2 Procedure

The procedure in figure 7.4.2.8.2-1 describes the case where an authorized MCData user is upgrading an ongoing MCData one-to-one SDS communication to an MCData emergency one-to-one SDS communication. This procedure is applicable only when MCData one-to-one SDS communication is established as described in subclause 7.4.2.3 "One-to-one standalone short data service using media plane" or as described in subclause 7.4.2.4 "One-to-one short data service session".

Pre-conditions:

1. Both members of the MCData one-to-one SDS communication belong to the same MCData system.
2. MCdata one-to-one SDS communication is already in progress.

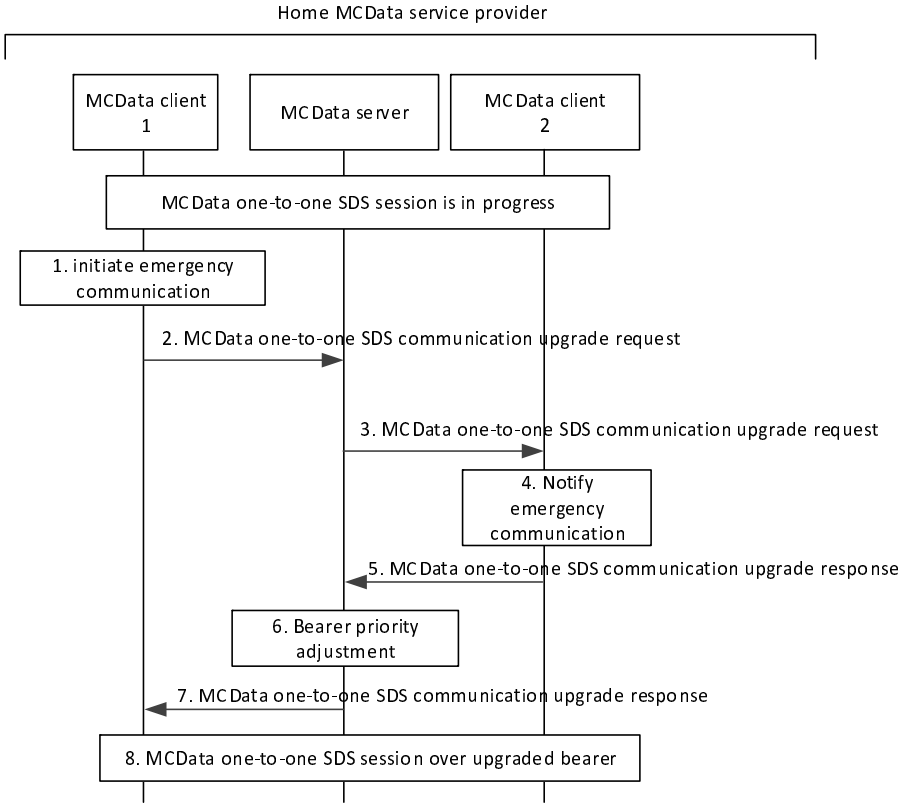

Figure 7.4.2.8.2-1 MCData one-to-one SDS communication upgraded to MCData emergency one-to-one SDS communication

1. The MCData user at MCData client 1 initiates an emergency. MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

2. MCData client 1 requests the MCData server to upgrade the one-to-one MCData SDS communication to in-progress emergency by sending a MCData one-to-one SDS communication upgrade request.

3. The MCData server sends the MCData one-to-one SDS communication upgrade request towards MCData client 2, the MCData client of the other participant.

NOTE 2: MCData client 2 does not set its emergency state as a result of receiving the MCData one-to-one SDS communication upgrade request containing the emergency indicator.

4. The MCData user is notified of the in-progress emergency of the MCData emergency one-to-one SDS communication.

5. The receiving MCData client acknowledges the MCData one-to-one SDS communication upgrade request and sends MCData one-to-one SDS communication upgrade response to the MCData server.

6. The MCData server adjusts the priority of the underlying bearer for both participants of the MCData one-to-one SDS communication. The priority is retained until the communication session ends.

7. The MCData server sends MCData one-to-one SDS communication upgrade response to MCData client 1.

8. MCData client 1 and MCData client 2 continue with the MCData one-to-one SDS communication, which has been transformed into an MCData emergency one-to-one SDS communication.

7.4.2.9 Group SDS communication upgrade to a group emergency SDS communication

7.4.2.9.1 General

This clause is for adding procedures related to upgrading an existing MCData group SDS communication to an MCData emergency group SDS communication.

7.4.2.9.2 Procedure

The procedure in figure 7.4.2.9.2-1 describes the case where an authorized MCData user is upgrading an ongoing MCData group SDS communication to an MCData emergency group SDS communication. This procedure is applicable only when group MCData communication is established as described in subclause 7.4.2.6 "Group standalone short data service using media plane" or as described in subclause 7.4.2.7 "Group short data service session".

NOTE 1: For simplicity, a single MCData server is shown in place of a user home MCData server and a group hosting MCData server.

Pre-conditions:

1. The MCData group is previously defined on the group management server with MCData client 1, MCData client 2 and MCData client 3 affiliated to that MCData group.

2. All members of the MCData group belong to the same MCData system.

3. MCData group SDS communication is already in progress.

4. The initiating MCData client 1 has been configured to send an MCData emergency alert when upgrading an MCData emergency group communication.

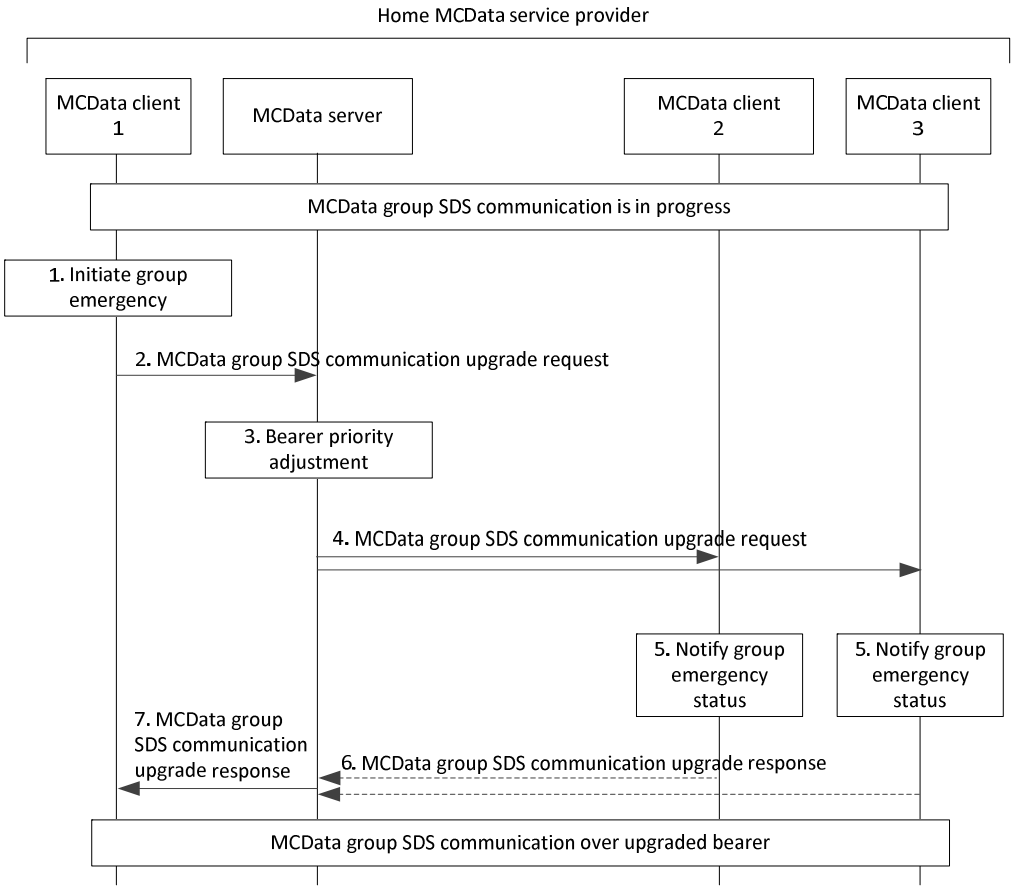

Figure 7.4.2.9.2-1: MCData group SDS communication upgraded to MCData emergency group SDS communication

1. The MCData user at MCData client 1 initiates a group emergency. MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 2: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

2. MCData client 1 requests the MCData server to upgrade the MCData group to an in-progress emergency state by sending a MCData group SDS communication upgrade request. The MCData client 1 sets the emergency indicator in the request. If configured to send an MCData alert when initiating an MCData emergency group SDS upgrade, the request also contains an indication that an MCData alert is to be initiated.

3. The MCData server sets the emergency state of the MCData group and adjusts the priority of the underlying bearer for all or selected participants in the MCData group SDS communication that receive the communication over unicast.

NOTE 3: The determination of the selected participants whose bearers have to be upgraded is left to implementation.

NOTE 4: While the MCData group is in the in-progress emergency state, all types of MCData communications within the group are processed as emergency group communications by the MCData server. MCData group members that are not in the emergency state do not indicate emergency in group communication requests.

4. MCData server sends the MCData group SDS communication upgrade request towards the MCData clients of each of those affiliated MCData group members. The request contains an indication of an MCData emergency alert if the request from the originator indicated MCData emergency alert.

5. MCData users are notified of the in-progress emergency state of the MCData group.

6. The receiving MCData clients send the MCData group SDS communication upgrade response to the MCData server to acknowledge the MCData group emergency request. For a multicast call, these acknowledgements are not sent.

7. The MCData server sends the MCData group SDS communication upgrade response to the MCData user 1 to confirm the upgrade request.

NOTE 5: Step 7 can occur at any time following step 3, depending on the conditions to proceed with the call.

MCData client 1, MCData client 2 and MCData client 3 continue with the MCData group SDS communication, which has been transformed into an MCData emergency group SDS communication.

7.4.2.10 Group SDS communication in-progress emergency group state cancel

7.4.2.10.1 General

This clause describes procedures related to MCData in-progress emergency group state cancel. The emergency state of the group can also be cancelled by the group FD in-progress emergency state cancellation procedure in subclause 7.5.2.13.2, or by the emergency alert cancellation procedure specified in 3GPP TS 23.280 [16], subclause 10.10.1.2.2.2.

7.4.2.10.2 Procedure

The procedure in figure 7.4.2.10.2-1 describes the case where an authorized MCData user cancels MCData group's in-progress emergency.

Pre-conditions:

1. The MCData group is previously defined on the group management server with MCData client 1, MCData client 2 and MCData client 3 affiliated to that MCData group.

2. All members of the MCData group belong to the same MCData system.

3. MCData group members have been notified about the in-progress emergency.

4. The MCData group is in the in-progress emergency state and has prioritized bearer support.

5. MCData client 1 previously initiated the in-progress emergency for the group.

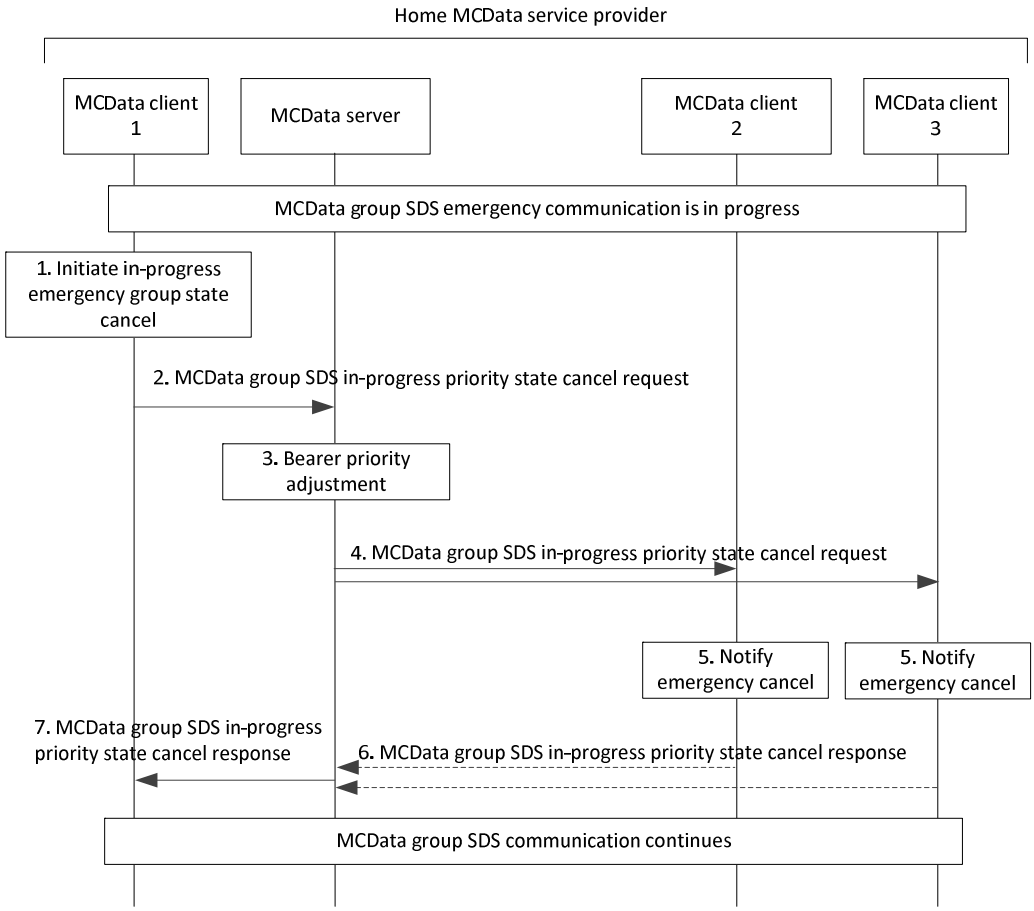

Figure 7.4.2.10.2-1: MCData group SDS in-progress emergency group state cancel

1. The user at the MCData client 1 initiates an MCData group SDS in-progress emergency group state cancel.

NOTE 1: An MCData user authorized to cancel in-progress emergencies on the MCData group can also be authorised to cancel the MCData emergency alert in addition to the initiator. However, only the initiator can cancel the initiator's local MCData emergency state.

2. The MCData client 1 sends an MCData group SDS communication in-progress priority state cancel request to the MCData server. The MCData client 1 also resets the emergency indicator in the request to inform MCData server about cancellation of in-progress emergency group state.

NOTE 2: If an MCData emergency alert relating to MCData client 1 is in effect together with an MCData in-progress emergency group state on the MCData group, the MCData emergency alert of MCData client 1 can be cancelled at the same time. In that case, the MCData group SDS in-progress priority group state cancel request carries an indication that the emergency alert of MCData client 1 is also being cancelled.

NOTE 3: If an MCData group SDS communication in-progress priority state cancel request is received by the MCData server while a group member that is in the emergency state is transmitting, the MCData group SDS communication in-progress priority state cancel request is rejected by the MCData server.

3. The MCData server adjusts the priority of the underlying bearer; priority treatment is no longer required. The MCData server cancels/resets the emergency in-progress state of the MCData group.

4. The MCData server sends an MCData group SDS in-progress priority state cancel request to the MCData group members.

5. MCData group members are notified of the MCData group SDS in-progress emergency state cancel.

6. The receiving MCData clients send the MCData group SDS in-progress priority state cancel response to the MCData server to acknowledge the MCData in-progress emergency group state cancel. For a multicast call scenario, these acknowledgements are not sent.

7. The MCData server sends the MCData group SDS in-progress priority state cancel response to the MCData user 1 to confirm the MCData in-progress emergency group state cancel. If the MCData in-progress emergency group state cancel request (in step 2) contained the "Alert indicator" IE, the MCData client 1 resets its local emergency status.

NOTE 4: Step 7 can occur at any time following step 3, depending on the conditions to proceed with the call.

7.4.2.11 Group SDS communication upgrade to an imminent peril group SDS communication

7.4.2.11.1 General

This clause is for adding procedures related to upgrade to an imminent peril group SDS communication.

7.4.2.11.2 Procedure

This procedure is applicable only when group MCData SDS communication is established as described in subclause 7.4.2.6 "Group standalone short data service using media plane" or as described in subclause 7.4.2.7 "Group short data service session". The MCData service shall support the procedures and related information flows as specified in subclause 7.4.2.9 "Group SDS communication upgrade to a group SDS emergency communication" with the following clarifications:

- In step 2), the MCData client 1 sets the imminent peril indicator;

- In step 3), the bearers' priority is adjusted as necessary, to correspond to an imminent peril priority which could be different than the setting used in the procedure in subclause 7.4.2.9; and

- In step 5), MCData users are notified of the in-progress imminent peril state of the MCData group.

7.4.2.12 Group SDS communication in-progress imminent peril group state cancel

7.4.2.12.1 General

This clause is for adding procedures related to group SDS communication in-progress imminent peril group state cancel.

7.4.2.12.2 Procedure

The MCData service shall support the procedures and related information flows as specified in subclause 7.4.2.10 "Group SDS communication in-progress emergency group state cancel" with the following clarifications:

- In step 2), the MCData client 1 sets imminent peril indicator; and

- In step 5), MCData users are notified of the group SDS communication in-progress imminent peril state cancel.

7.4.2.13 Providing data for a user entering an ongoing MCData group conversation

7.4.2.13.1 General

The MCData service shall support mechanisms that allow a MCData user be presented with the whole content of a group conversation in a group that he is a member of. This includes the content (messages) exchanged before the MCData user joins the group conversation.

7.4.2.13.2 Procedure

Figure 7.4.2.13.2-1 describes procedures for a MCData user joining late a group conversation.

Pre-conditions:

1. The MCData group is provisioned for lossless communication.
2. All members of the MCData group have an account created in the MCData message store.
3. MCData client 1, MCData client 2 and MCData client 3 are members of the same MCData group,
4. MCData client 1 and 2 are served by MCData server 1 and have registered and affiliated to the MCData group.
5. MCData client 3 is served by MCData server 2 and has not affiliated to the MCData group yet.

NOTE 1: The interactions of MCData client 1 and MCData client 2 to MCData message store are not shown in the figure.

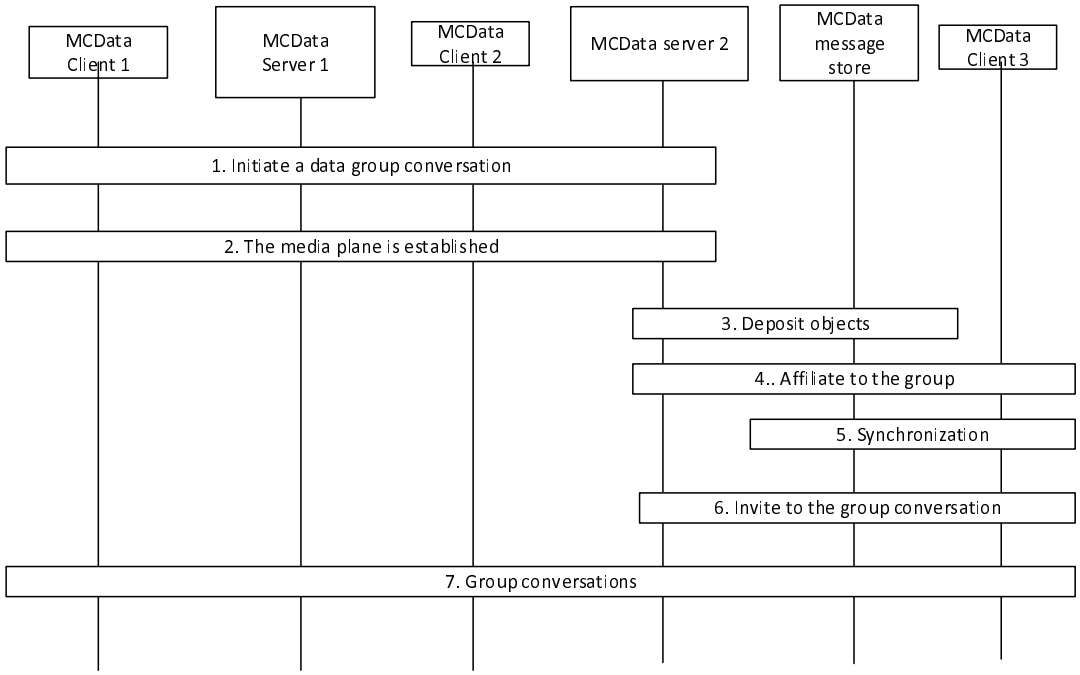

Figure 7.4.2.13.2-1: Providing data for a user entering an ongoing MCData group conversation

1. A group conversation is initiated according to procedures in subclause 7.4.2.6, and all members of the group are invited into the communication whether affiliated or not. As MCData user 3 is not affiliated at this time, MCData server 2 accepts the invitation to the group conversation on behalf of MCData user 3.
2. The media plane is established for the group conversation. MCData server 2 is in the media plane to receive the conversation on behalf of MCData user 3.
3. MCData server 2 stores the received conversation to MCData user 3 account in the MCData message store.

NOTE 2: If the received conversation requests delivery notification the MCData server 2 will send message delivered to the message sender. If the received conversation requests read notification the MCData client 3 will send message read to the message sender once it has presented the message to the user.

4. MCData user 3 is online and using MCData client 3 to affiliate to the MCData group.
5. MCData client 3, through the message store client, synchronizes with the MCData user 3 account in the MCData message store.
6. MCData server 2 invites MCData client 3 to the MCData group conversation.
7. MCData user 3 joins the MCData group conversation.

7.4.3 Short data service for off-network

7.4.3.1 General

Off-network SDS communications are based on ProSe capabilities as described in clause 7.16.

7.4.3.2 Information flows for short data service

7.4.3.2.1 MCData standalone data request

Table 7.4.3.2.1-1 describes the information flow for the MCData standalone data request sent from the MCData client to another MCData client.

Table 7.4.3.2.1-1: MCData standalone data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData ID	M	The identity of the MCData user towards which the data is sent
Date and Time	M	Date and time of transmission
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Emergency indicator (see NOTE 1)	O	Indicates that the MCData communication is an MCData emergency communication
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData client consumption
Application identifier (see NOTE 2)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
Payload	M	SDS content
NOTE 1: This information element shall be included for the MCData emergency communication. NOTE 2: The application identifier shall be included only if the payload destination type indicates that the payload is for application consumption.		

7.4.3.2.2 MCData data disposition notification

Table 7.4.3.2.2-1 describes the information flow for the MCData data disposition notification sent from the MCData client to another MCData client.

Table 7.4.3.2.2-1: MCData data disposition notification

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the notification is sent
MCData ID	M	The identity of the MCData user sending notification
Conversation Identifier	M	Identifies the conversation
Reply Identifier	M	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition	M	Disposition which is delivered or read or both
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption

7.4.3.2.3 MCData group standalone data request

Table 7.4.3.2.3-1 describes the information flow for the MCData group standalone data request sent from the MCData client to another MCData client.

Table 7.4.3.2.3-1: MCData group standalone data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData group ID	M	The MCData group ID to which the data is to be sent
Date and Time	M	Date and time of transmission
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Emergency indicator (see NOTE 1)	O	Indicates that the MCData communication is an MCData emergency communication
Imminent peril indicator (see NOTE 1)	O	Indicates that the MCData communication is an MCData imminent peril communication
Payload Destination Type	M	Indicates whether the payload is for application consumption or MCData client consumption
Application identifier (see NOTE 2)	O	Identifies the application for which the payload is intended (e.g. text string, port address, URI)
Application metadata container	O	Implementation specific information that is communicated to the recipient
Payload	M	SDS content
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: The application identifier shall be included only if the payload destination type indicates that the payload is for application consumption.		

7.4.3.3 One-to-one standalone short data service using signalling control plane

7.4.3.3.1 General

This subclause describes the detailed procedures for the scenario where SDS data is to be sent to MCData user in off-network.

7.4.3.3.2 Procedure

Figure 7.4.3.3.2-1 describes procedures for an off-network MCData client 1 initiating one-to-one MCData data communication for sending standalone SDS data to other MCData client, with or without disposition request. Standalone refers to sending unidirectional data in one transaction. The SDS data size is assumed to be pre-configured.

Pre-conditions:

1. MCData user 1 has initiated communication for sending standalone SDS data to other MCData user 2.
2. MCData client 1 and MCData client 2 are members of the same ProSe Discovery group and are ProSe 1:1 direct communication capable.
3. MCData client 1 has discovered MCData client 2 in proximity, associated with MCData user B, using ProSe Discovery procedures.

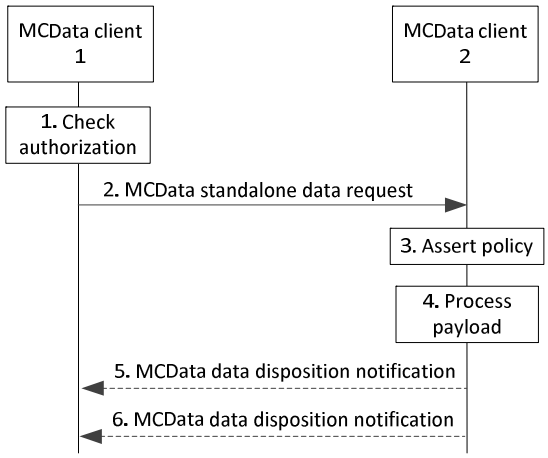

Figure 7.4.3.3.2-1: One-to-one standalone short data service using signalling control plane

1. MCData client 1 checks whether the MCData user 1 is authorized to send MCData standalone data request.

2. If MCData user 1 is authorised MCData client 1 sends a MCData standalone data request towards the MCData client 2. The MCData standalone data request contains conversation identifier for message thread indication. The MCData standalone data request may include additional implementation specific information in the application metadata container. The MCData standalone data request may contain disposition request if indicated by the user at MCData client 1. If MCData user at the MCData client 1 initiates an MCData emergency communication, then emergency indicator is included in the MCData standalone data request. If an MCData emergency state is not set already when MCData emergency communication is initiated, the MCData client 1 sets its MCData emergency state and is retained until explicitly cancelled. The value of ProSe Per Packet Priority is upgraded according to the state of the MCData communication.

3. On receiving a MCData standalone data request, the MCData client 2 checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege.

4. If the policy assertion is positive and the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData client 2 may be notified. Otherwise if the payload is not for MCData user consumption, then the MCData user of MCData client 2 shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCData client 2 which is addressed to a known local non-MCData application that is not yet running shall cause the MCData client 2 to start the local non-MCData application (i.e., remote start application) and shall pass the payload content to the just started application.

NOTE: If the policy assertion was negative, the MCData client 2 sends an appropriate notification to MCData client 1.

5. If the MCData data disposition for delivery was requested by the user at MCData client 1, then the receiving MCData client 2 initiates a MCData data disposition notification for delivery report.

6. If the MCData data disposition for read was requested by the user at MCData client 1, then once the receiving user reads the data, the receiving MCData client 2 initiates a MCData data disposition notification for read report.

7.4.3.4 Group standalone short data service using signalling control plane

7.4.3.4.1 General

The initiation of a group standalone SDS to a selected group results in off-network MCData group members receiving the SDS data.

7.4.3.4.2 Procedure

Figure 7.4.3.4.2-1 describes procedures for an off-network MCData client 1 initiating group MCData data communication for sending SDS data to a MCData group, with or without disposition request. The SDS data size limit is pre-configured.

Pre-conditions:

1. MCData user 1 has initiated group communication for sending SDS data to the MCData group.
2. Information for ProSe direct communications corresponding to the MCData group and its mapping to ProSe Layer-2 Group ID are pre-configured in MCData client 1.
3. MCData client 1 to MCData client N are members of the same MCData group.

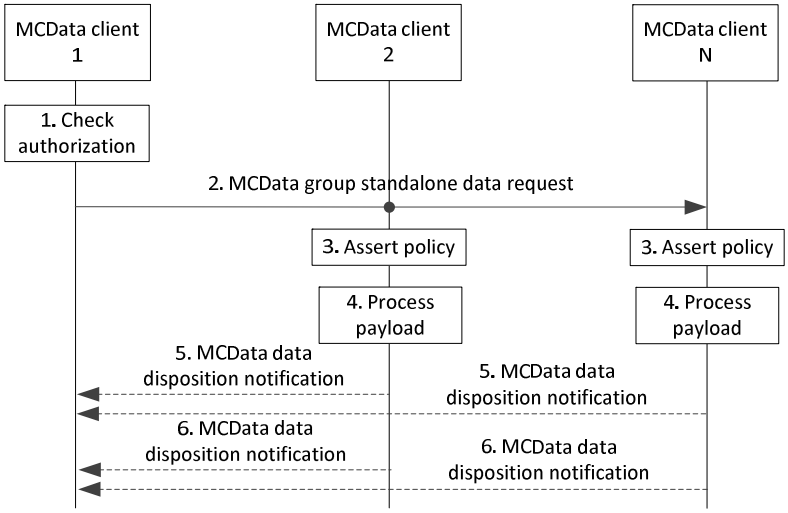

Figure 7.4.3.4.2-1: Group standalone short data service using signalling control plane

1. MCData client 1 checks whether the MCData user 1 is authorized to send MCData group standalone data request.
2. If MCData user 1 is authorised MCData client 1 sends a MCData group standalone data request towards the MCData group. The MCData group standalone data request contains conversation identifier for message thread indication. The MCData group standalone data request may include additional implementation specific information in the application metadata container. The MCData group standalone data request may contain disposition request if indicated by the user at MCData client 1. If MCData group standalone data request contains disposition request, MCData group standalone data request shall also contain the IP address of the MCData client 1. If MCData user at the MCData client 1 initiates an MCData emergency communication, then the emergency indicator or the imminent peril indicator is included in the MCData standalone data request. If an MCData emergency state is not set already when MCData emergency communication is initiated, the MCData client 1 sets its MCData emergency state and is retained until explicitly cancelled. The value of ProSe Per Packet Priority is upgraded according to the state of the MCData communication.
3. On receiving a MCData group standalone data request, the MCData clients check whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege.
4. If the policy assertion is positive and the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user may be notified. Otherwise if the payload is not for MCData user consumption, then the MCData user shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCData clients 2 to N which is addressed to a known local non-MCData application that is not yet running shall cause the MCData clients 2 to N to start the local non-MCData application (i.e., remote start application) and shall pass the payload content to the just started application.

NOTE: If the policy assertion was negative, the MCData clients sends an appropriate notification to MCData client 1.

5. If the MCData data disposition for delivery was requested by the user at MCData client 1, then the receiving MCData clients initiate a MCData data disposition notification for delivery report.

6. If the MCData data disposition for read was requested by the user at MCData client 1, then once the receiving user reads the data, the receiving MCData clients 2 to N initiate a MCData data disposition notification for read report.

7.4.3.5 Void

7.4.3.6 Group standalone short data service with MCData message store

7.4.3.6.1 General

A MCData user's off-network communication needs to be part of his communication history when the MCData user has an account in the MCData message store.

7.4.3.6.2 Procedure

Figure 7.4.3.6.2-1 describes procedures of a MCData user, MCData user 2, that has an account in MCData message store and how his off-network SDS group communication is stored in his account in the MCData message store. All other MCData clients in the figure follow the procedures described in subclause 7.4.3.4.

Pre-conditions:

1. MCData user 1 to N are in an off-network group communication.

2. Information for ProSe direct communications corresponding to the MCData group and its mapping to ProSe Layer-2 Group ID are pre-configured to MCData client 1 to N.

3. MCData client 1 to N are members of the same MCData group.

4. MCData user 2 has an account in the MCData message store.

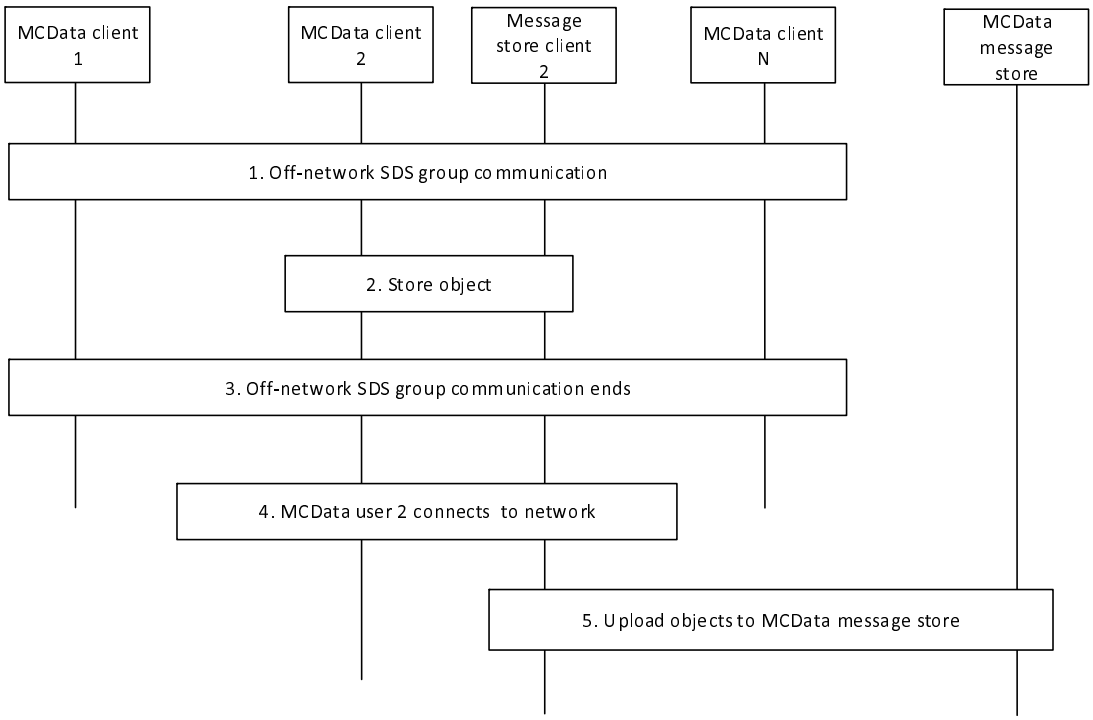

Figure 7.4.3.6.2-1: Group standalone short data service with MCData message store

1. MCData client 1 to MCData client N are in an off-network group communication according to the procedures in subclause 7.4.3.4, SDS are exchanged among all MCData clients.

2. If the SDS is for MCData user consumption, the SDS is stored in the local message store on the MCData UE of MCData user 2.

NOTE: A pre-configured folder for off-network communication objects can be provisioned both on the UE and the user account on the MCData message store to be used for synchronization.

3. The off-network group communication comes to an end.

4. The MCData user 2 connects back to the network.

5. The MCData user 2 decides to keep the off-network communication in his account on the MCData message store. The message store client 2 uploads the off-network communication objects from the local message store to the MCData message store.

7.5 File distribution

7.5.1 General

File distribution (mandatory and non-mandatory download) is enabled for both one-to-one and group.

7.5.2 File distribution for on-network

7.5.2.1 Information flows for file distribution

7.5.2.1.1 MCData upload data request

Table 7.5.2.1.1-1 describes the information flow for the MCData upload data request sent from the media storage client to the MCData content server.

Table 7.5.2.1.1-1: MCData upload data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading data
Content (see NOTE)	O	Content to upload
Content reference (see NOTE)	O	URL reference of the content stored in the MCData message store account of the MCData user
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
NOTE: Either the Content or the Content reference must be present.		

7.5.2.1.2 MCData upload data response

Table 7.5.2.1.2-1 describes the information flow for the MCData upload data response sent from the MCData content server to the media storage client.

Table 7.5.2.1.2-1: MCData upload data response

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to upload data
Upload confirmation	M	An indication whether the upload to the content storage is successful or not
Content reference	O	URL reference of the content stored (see NOTE).
NOTE: Content reference shall be present when the upload confirmation is successful.		

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

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.		

7.5.2.1.5 MCData FD request (using HTTP)

Table 7.5.2.1.5-1 describes the information flow for the MCData FD request (in subclause 7.5.2.4.2) sent from the MCData client to the MCData server.

Table 7.5.2.1.5-1: MCData FD request (using HTTP) from MCData client to MCData server

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The functional alias associated with MCData user sending the file
MCData ID (see NOTE)	O	The identity of the MCData user receiving the file
Functional alias (see NOTE)	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download
Application metadata container	O	Implementation specific information that is communicated to the recipient
Content reference	M	URL reference to the content and file metadata information
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
Deposit file indication	O	Indicates whether the file to be stored into the MCData message store account of the MCData user
NOTE: Either the MCData ID or the functional alias must be present.		

Table 7.5.2.1.5-2 describes the information flow for the MCData FD request (in clause 7.5.2.4.2) sent from an MCData server to a partner MCData server.

Table 7.5.2.1.5-2: MCData FD request (using HTTP) from an MCData server to MCData server

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The associated functional alias of the MCData user identity sending the file
MCData ID	M	The identity of the MCData user receiving the file
Functional alias	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download
Application metadata container	O	Implementation specific information that is communicated to the recipient
Content reference	M	URL reference to the content and file metadata information
Emergency indicator	O	Indicates that the data request is for MCData emergency communication

Table 7.5.2.1.5-3 describes the information flow for the MCData FD request (in clause 7.5.2.4.2) sent from the MCData server to the MCData client.

Table 7.5.2.1.5-3: MCData FD request (using HTTP) from MCData server to MCData client

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The associated functional alias of the MCData user sending the file
MCData ID	M	The identity of the MCData user receiving the file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download
Application metadata container	O	Implementation specific information that is communicated to the recipient
Content reference	M	URL reference to the content and file metadata information
Emergency indicator	O	Indicates that the data request is for MCData emergency communication

7.5.2.1.6 MCData FD response (using HTTP)

Table 7.5.2.1.6-1 describes the information flow for the MCData FD response (in subclause 7.5.2.4.2) sent from the MCData client to the MCData server, from the MCData server to another MCData client and from an MCData server to a partner MCData server.

Table 7.5.2.1.6-1: MCData FD response (using HTTP)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
Result	O	Indicates if the request is accepted or not

7.5.2.1.7 MCData download completed report

Table 7.5.2.1.7-1 describes the information flow for the MCData download completed report sent from the MCData client to the MCData server, from the MCData server to another MCData client and from an MCData server to a partner MCData server.

Table 7.5.2.1.7-1: MCData download completed report

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	M	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition confirmation	M	An indication that the client has completed downloading file

7.5.2.1.7A MCData aggregated download completed report

Table 7.5.2.1.7A-1 describes the information flow for the MCData aggregated download completed report sent from the MCData server to the MCData client, indicating the result of a request for a file delivery to an MCData group.

Table 7.5.2.1.7A-1: MCData aggregated download completed report

Information element	Status	Description
MCData ID	M	The identity of the MCData user that sent the FD request
Number of Aggregated Reports	M	Total number of received individual completed reports
Number of Successful Deliveries	O	Number of received individual completed reports indicating success
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	M	Identifies the original MCData transaction which the current transaction is a reply to
Successful MCData ID list	O (NOTE)	List, partial or full, of MCData users who successfully received the file delivery
Unsuccessful MCData ID list	O (NOTE)	List, partial or full, of MCData users who reported failure to fully receive the file delivery successfully
NOTE: No more than one of these information elements may be present.		

7.5.2.1.8 MCData FD request (using media plane)

Table 7.5.2.1.8-1 describes the information flow for the MCData FD request (in subclause 7.5.2.5.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.8-1: MCData FD request (using media plane/MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The functional alias associated with MCData user sending the file
MCData ID (see NOTE 1)	O	The identity of the MCData user receiving the file
Functional alias (see NOTE 1)	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE 2)	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
NOTE 1: Either the MCData ID or the functional alias must be present. NOTE 2: Includes file metadata.		

Table 7.5.2.1.8-2: MCData FD request (using media plane/MCData server to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The associated functional alias of the MCData user identity sending the file
MCData ID	M	The identity of the MCData user receiving the file
Functional alias	O	The associated functional alias of the MCData user identity towards which the data is sent.
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE)	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
NOTE: Includes file metadata.		

Table 7.5.2.1.8-3: MCData FD request (using media plane/MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The associated functional alias of the MCData user identity sending the file
MCData ID	M	The identity of the MCData user receiving the file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE)	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
Emergency indicator	O	Indicates that the data request is for MCData emergency communication
NOTE: Includes file metadata.		

7.5.2.1.9 MCData FD response (using media plane)

Table 7.5.2.1.9-1 describes the information flow for the MCData FD response (in subclause 7.5.2.5.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.9-1: MCData FD response (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected
Establishment reason	O	Reason for establishment or rejection

7.5.2.1.10 MCData group standalone FD request (using HTTP)

Table 7.5.2.1.10-1 describes the information flow for the MCData group standalone FD request (in subclause 7.5.2.6.2) sent from the MCData client to the MCData server.

Table 7.5.2.1.10-1: MCData group standalone FD request (using HTTP) from MCData client to MCData server

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The functional alias associated with MCData user sending the file
MCData group ID	M	The MCData group ID to which the file is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download
Application metadata container	O	Implementation specific information that is communicated to the recipient
Content reference	M	URL reference to the content and file metadata information
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

Table 7.5.2.1.10-2 describes the information flow for the MCData group standalone FD request (in subclause 7.5.2.6.2) sent from the MCData server to the MCData client.

Table 7.5.2.1.10-2: MCData group standalone FD request (using HTTP) from MCData server to MCData client

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The functional alias associated with MCData user sending the file
MCData group ID	M	The MCData group ID to which the file is to be sent
MCData ID	M	The identity of the MCData user receiving the file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download
Application metadata container	O	Implementation specific information that is communicated to the recipient
Content reference	M	URL reference to the content and file metadata information
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

7.5.2.1.11 MCData group standalone FD response (using HTTP or MBMS download delivery method)

Table 7.5.2.1.11-1 describes the information flow for the MCData group standalone FD response (in subclause 7.5.2.6.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.11-1: MCData group standalone FD response (using HTTP)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData group ID	M	The MCData group ID to which the file is to be sent
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
Result	M	Indicates if the request is accepted or not

7.5.2.1.12 MCData group standalone FD request (using media plane)

Table 7.5.2.1.12-1 describes the information flow for the MCData group standalone FD request (in subclause 7.5.2.7.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.12-1: MCData group standalone FD request (using media plane/MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The functional alias associated with MCData user sending the file
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE 3)	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: Includes file metadata.		

Table 7.5.2.1.12-2: MCData group standalone FD request (using media plane/MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
Functional alias	O	The functional alias associated with MCData user sending the file
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user receiving the file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE 3)	M	Media parameters offered
Requested priority	O	Application priority level requested for this communication session
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present. NOTE 3: Includes file metadata.		

7.5.2.1.13 MCData group standalone FD response (using media plane)

Table 7.5.2.1.13-1 describes the information flow for the MCData group standalone FD response (in subclause 7.5.2.7.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.13-1: MCData group standalone FD response (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData group ID	M	The MCData group ID to which the file is to be sent
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected

7.5.2.1.14 MCData remove file request by user

Table 7.5.2.1.14-1 describes the information flow for the MCData remove file request by user sent from the media storage client to the media storage function of the MCData content server, and from the MCData content server to another MCData content server in a partner MCData system.

Table 7.5.2.1.14-1: MCData remove file request by user

Information element	Status	Description
MCData ID (see NOTE 1)	O	The identity of the MCData user removing file
Partner MCData system identity (see NOTE 2)	O	The identity of the partner MCData system where the file has also been downloaded
Content reference	M	URL of the content to be removed

NOTE 1: The identity of the MCData user removing the file is present when sent from MCData client to MCData content server
NOTE 2: The identity of the partner MCData system is present when sent from MCData content server to MCData content server.

7.5.2.1.15 MCData remove file response by user

Table 7.5.2.1.15-1 describes the information flow for the MCData remove file response by user sent from the media storage function of the MCData content server to the media storage client, and from the MCData content server to another MCData content server in a partner MCData system.

Table 7.5.2.1.15-1: MCData remove file response by user

Information element	Status	Description
MCData ID (see NOTE 1)	O	The identity of the MCData user removing file
Partner MCData system identity (see NOTE 2)	O	The identity of the partner MCData system where the file has also been downloaded
Result	M	Indicates the success or failure of the file removal

NOTE 1: The identity of the MCData user removing the file is present when sent from MCData content server to MCData client
NOTE 2: The identity of the partner MCData system is present when sent from MCData content server to MCData content server.

7.5.2.1.16 Void

7.5.2.1.17 Void

7.5.2.1.18 MCData remove file notify

Table 7.5.2.1.18-1 describes the information flow for the MCData remove file notify sent from the MCData server to the MCData client that the shared file has been removed.

Table 7.5.2.1.18-1: MCData remove file notify

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploaded the file
Content reference	M	URL of the content that has been removed
Reason	O	The reason the file is removed

7.5.2.1.19 MCData file retrieve request

Table 7.5.2.1.19-1 describes the information flow for the MCData file retrieve request sent from an MCData content server in a partner MCData system to an MCData content server in the primary MCData system of the source of the content.

Table 7.5.2.1.19-1: MCData file retrieve request

Information element	Status	Description
Content reference	M	URL reference to the content to download

7.5.2.1.20 MCData file retrieve response

Table 7.5.2.1.20-1 describes the information flow for the MCData file retrieve response sent from the MCData content server in the primary MCData system of the source of the content to an MCData content server in a partner MCData system.

Table 7.5.2.1.20-1: MCData file retrieve response

Information element	Status	Description
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 file retrieve request indicates success.		

7.5.2.1.21 MCData group standalone FD over MBMS request

Table 7.5.2.1.21-1 describes the information flow for the MCData group standalone FD request (in subclause 7.5.2.6.2) sent from the MCData server to another MCData client.

Table 7.5.2.1.21-1: MCData group standalone FD over MBMS request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
MCData group ID	M	The MCData group ID to which the file is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	M	Indicates mandatory download
Application metadata container	O	Implementation specific information that is communicated to the recipient
Content reference	M	URL reference to the content and file metadata information
MBMS user service id	M	Id of the MBMS user service delivering the file
MBMS content URI	M	URI upon which the content is delivered in the MBMS user service

7.5.2.1.22 MCData one-to-one FD upgrade request

Table 7.5.2.1.22-1 describes the information flow for the MCData one-to-one FD upgrade request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.22-1: MCData one-to-one FD upgrade request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data (when initiated by MCData client); The identity of the MCData user receiving data (when initiated by MCData server).
Functional alias	O	The associated functional alias of the MCData user sending data or receiving data.
Conversation Identifier	M	Identifies the conversation
Emergency indicator	M	Indicates that the data request is for MCData emergency communication

7.5.2.1.23 MCData one-to-one FD upgrade response

Table 7.5.2.1.23-1 describes the information flow for the MCData one-to-one FD upgrade response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.23-1: MCData one-to-one FD upgrade response

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data (when initiated by MCData client); The identity of the MCData user receiving data (when initiated by MCData server).
Conversation Identifier	M	Identifies the conversation

7.5.2.1.24 MCData group FD upgrade request

Table 7.5.2.1.24-1 describes the information flow for the MCData group FD upgrade request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.24-1: MCData group FD upgrade request (MCData client to MCData server)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the upgrade request
Functional alias	O	The associated functional alias of the MCData user sending data or receiving data.
MCData group ID	M	The MCData group ID on which the emergency upgrade request is made
Conversation Identifier	M	Identifies the conversation
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

Table 7.5.2.1.24-2: MCData group FD upgrade request (MCData server to MCData client)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the upgrade request
Functional alias	O	The associated functional alias of the MCData user sending data or receiving data.
MCData group ID	M	The MCData group ID on which the emergency upgrade request is made
MCData ID	M	The identity of the MCData user receiving the upgrade request
Conversation Identifier	M	Identifies the conversation
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

7.5.2.1.25 MCData group FD upgrade response

Table 7.5.2.1.25-1 describes the information flow for the MCData group FD upgrade response sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.25-1: MCData group FD upgrade response

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data (when initiated by MCData client); The identity of the MCData user receiving data (when initiated by MCData server).
MCData group ID	M	The MCData group ID on which the emergency upgrade request is made
Conversation Identifier	M	Identifies the conversation

7.5.2.1.26 MCData group FD in-progress priority state cancel request

Table 7.5.2.1.26-1 describes the information for the MCData group FD in-progress priority state cancel request sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.5.2.1.26-1: MCData group FD in-progress priority state cancel request (MCData client to MCData server)

Information Element	Status	Description
MCData ID	M	The identity of the cancelling MCData User
MCData group ID	M	The MCData group ID on which the MCData in-progress emergency state is to be cancelled.
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Conversation Identifier	M	Identifies the conversation
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

Table 7.5.2.1.26-2: MCData group FD in-progress priority state cancel request (MCData server to MCData client)

Information Element	Status	Description
MCData ID	M	The identity of the cancelling MCData User
MCData group ID	M	The MCData group ID on which the MCData in-progress emergency state is to be cancelled.
MCData ID	M	The identity of the MCData user receiving the cancel request
Emergency indicator (see NOTE 1)	O	Indicates that the data request is for MCData emergency communication
Alert indicator (see NOTE 2)	O	Indicates whether an emergency alert is to be sent
Imminent peril indicator (see NOTE 1)	O	Indicates that the data request is for MCData imminent peril communication
Conversation Identifier	M	Identifies the conversation
NOTE 1: If used, only one of these information elements shall be present. NOTE 2: This information element may be present only when Emergency indicator is present.		

7.5.2.1.27 MCData group FD in-progress priority state cancel response

Table 7.5.2.1.27-1 describes the information flow for the MCData group FD in-progress priority state cancel response sent from the MCData server to the MCData client.

Table 7.5.2.1.27-1: MCData group FD in-progress priority state cancel response information elements

Information Element	Status	Description
MCData ID	M	The identity of the cancelling party
MCData group ID	M	The MCData group ID on which the MCData in-progress emergency in-progress is to be cancelled.
Conversation Identifier	M	Identifies the conversation

7.5.2.1.28 MCData file upload request

Table 7.5.2.1.28-1 describes the information flow for the MCData file upload request sent from the MCData client to the MCData server.

Table 7.5.2.1.28-1: MCData file upload request

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading the file
Transaction Identifier	M	Identifies the MCData transaction
Access information	M	Provides access resource details to be used by the MCData client for the file upload, e.g. IP address and port
MCData content server information	M	Provides information about the target MCData content server, where the file is intended to be uploaded, e.g. URI or IP address, and port (e.g. standard port 80 for HTTP)
Emergency indicator	O	Indicates that the request is for an MCData emergency communication

7.5.2.1.29 MCData file upload response

Table 7.5.2.1.29-1 describes the information flow for the MCData file upload response sent from the MCData server to the MCData client.

Table 7.5.2.1.29-1: MCData file upload response

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to upload the file
Transaction Identifier	M	Identifies the MCData transaction
File upload confirmation	M	Indicates whether the file upload to the MCData content server can proceed or not

7.5.2.1.30 MCData file upload completion status

Table 7.5.2.1.30-1 describes the information flow for the MCData file upload completion status sent from the MCData client to the MCData server.

Table 7.5.2.1.30-1: MCData file upload completion status

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading the file
Transaction Identifier	M	Identifies the MCData transaction
File upload status	M	Indicates the file upload to the MCData content server is completed

7.5.2.1.31 MCData file download request

Table 7.5.2.1.31-1 describes the information flow for the MCData file download request sent from the MCData client to the MCData server.

Table 7.5.2.1.31-1: MCData file download request

Information element	Status	Description
MCData ID	M	The identity of the MCData user downloading the file
Transaction Identifier	M	Identifies the MCData transaction
Access information	M	Provides access resource details to be used by the MCData client for the file download, e.g. IP address and port
MCData content server information	M	Provides information about the target MCData content server, where the file is intended to be downloaded from, e.g. URI or IP address, and port (e.g. standard port 80 for HTTP)
Content reference	M	URL reference to the content to download
Emergency indicator	O	Indicates that the request is for an MCData emergency communication

7.5.2.1.32 MCData file download response

Table 7.5.2.1.32-1 describes the information flow for the MCData file download response sent from the MCData server to the MCData client.

Table 7.5.2.1.32-1: MCData file download response

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to dowload the file
Transaction Identifier	M	Identifies the MCData transaction
File download confirmation	M	Indicates whether the file download from the MCData content server can proceed or not

7.5.2.1.33 MCData file availability request

Table 7.5.2.1.33-1 describes the information flow for the MCData file availability request sent from the MCData server to the MCData content server.

Table 7.5.2.1.33-1: MCData file availability request

Information element	Status	Description
Content reference	M	URL reference of the file required to check its availability in the MCData content server

7.5.2.1.34 MCData file availability response

Table 7.5.2.1.34-1 describes the information flow for the MCData file availability response sent from the MCData content server to the MCData server.

Table 7.5.2.1.34-1: MCData file availability response

Information element	Status	Description
Content reference	M	URL reference of the file required to check its availability in the MCData content server
Result	M	Indicates whether the file is available or not

7.5.2.2 File upload using HTTP

7.5.2.2.1 General

The media storage client uses HTTP for a standalone data file upload towards the MCData content server.

7.5.2.2.2 Procedure for uploading the file residing in the local storage of the MCData UE

The procedure in figure 7.5.2.2.2-1 describes the case where an MCData user is uploading a file to media storage function on the MCData content server.

Pre-conditions:

1. The MCData user on the media storage client is registered for receiving MCData service.
2. The MCData content server has the ability to verify if the requesting MCData user is authorised to upload.

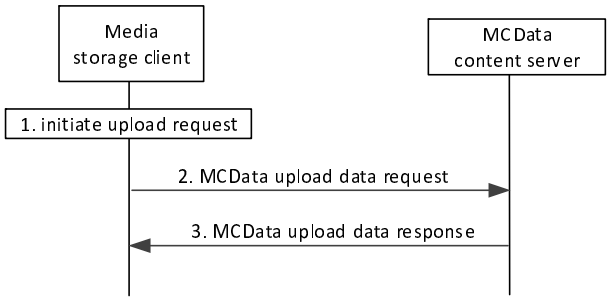

Figure 7.5.2.2.2-1: Uploading of the file residing in MCData UE using HTTP

1. The user at the media storage client initiates a file upload request of the chosen file. If MCData emergency state is already set for the media storage client (due to previously triggered MCData emergency alert), the media storage client sets emergency indicator in the request. The media storage client verifies that the size of the file is within the maximum data size for FD for the intended MCData FD request (by checking the group configuration for a group FD request and by checking the service configuration for a one-to-one FD request).
2. The file to be uploaded is received by the media storage client and sent to the media storage function on the MCData content server for storing using the MCData upload data request.
3. The MCData content server stores the file and provides a MCData upload data response indicating success (along with file URL to the media storage client) or failure.

7.5.2.2.3 Procedure for uploading the file residing in the MCData message store

The procedure in figure 7.5.2.2.3-1 describes the case where an MCData user is uploading a file to media storage function on the MCData content server from his or her MCData message store account.

Pre-conditions:

1. The Media storage client knows the URL of the file residing in the MCData message store account of the user.

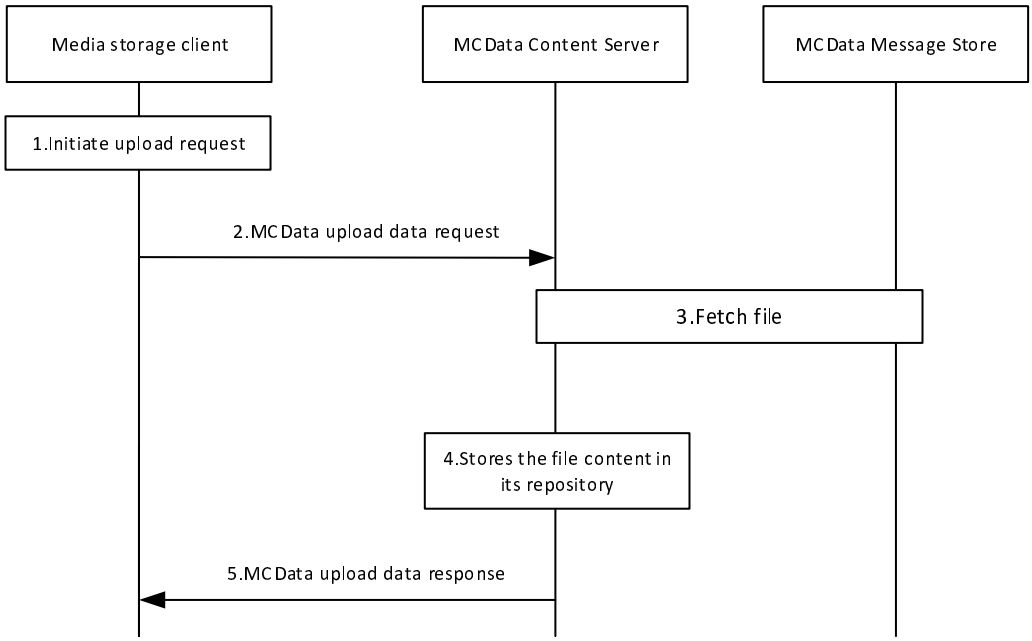

Figure 7.5.2.2.3-1: Uploading of the file residing in MCData message store using HTTP

1. The user at the media storage client initiates a file upload request of the file residing in his MCData message store account.
2. The URL of the file which needs to be retrieved from the MCData message store account of the user is sent to the media storage function on the MCData content server using the MCData upload data request.
3. The MCData content server fetches the file from the MCData message store account of the user using the URL provided in the MCData upload data request.
4. The MCData content server stores the retrieved file content into its repository.
5. The MCData content provides a MCData upload data response indicating success (along with file URL to the media storage client) or failure.

7.5.2.2.4 Procedure for file upload including request of network resources with required QoS

The procedure in figure 7.5.2.2.4-1 describes the case where an MCData client sends a request to the MCData server for the upload of a file from the media storage client on the MCData client to the media storage function on the MCData content server. The MCData server can, therefore, request network resources with the required QoS for the corresponding file upload.

Pre-conditions:

1. The MCData user on the MCData client is registered on the MCData server for receiving MCData service.
2. The MCData client is required to upload a file to the MCData content server over network resources with required QoS.
3. The MCData client knows its IP address/port to be used for the file upload as well as the URI or IP address/port of the target MCData content server.

NOTE: How the MCData client knows the IP addresses and ports to be used for the file upload is implementation specific and out of the scope of this specification.

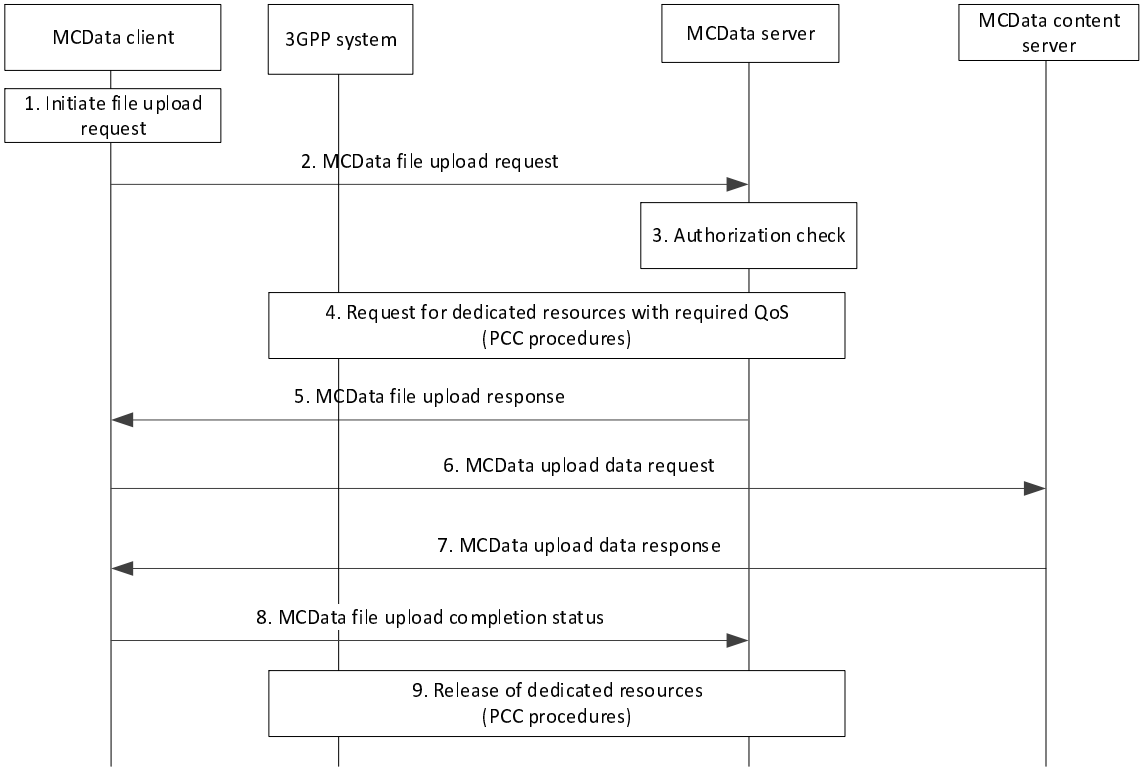

Figure 7.5.2.2.4-1: File upload using HTTP over network resources with required QoS

1. The MC user on the MCData client intends to upload a file to the MCData content server for file distribution. The MCData client verifies that the size of the file is within the maximum data size for FD for the intended MCData FD request (e.g., by checking the group configuration for a group FD request or the service configuration for a one-to-one FD request). If the MCData emergency state is already set for the MCData client, the MCData client sets the emergency indicator in the request.

2. The MCData client sends the MCData file upload request to the MCData server. This request contains information about the MCData client (including IP address and port to be used for the file upload), and the target MCData content server (including associated URI or IP address, and port).

3. The MCData server verifies that the corresponding MCData client is authorized to upload files to the corresponding MCData content server.

4. If the MCData client is authorized for the file upload, the MCData server sends a request to the 3GPP system for the allocation of network resources with the required QoS for the corresponding file upload communication between the MCData client and the MCData content server. For that, the MCData server performs policy and charging control (PCC) procedures, e.g., over the Rx reference point as described in 3GPP TS 23.203 [14] for the case of an EPS system.

5. The MCData server sends a MCData file upload response to the MCData client indicating if it can proceed with the file upload to the MCData content server.

6. The media storage client on the MCData client sends an MCData upload data request to the media storage function on the MCData content server to upload the file.

7. The MCData content server provides an MCData upload data response to the MCData client indicating if the file was successfully stored (along with file URL) or failure.

8. The MCData client provides to the MCData server an MCData file upload completion status indicating that the file upload is completed.

9. Based on the MCData file upload completion status, the MCData server requests to the 3GPP system to release the network resources allocated for the corresponding file upload.

7.5.2.3 File download using HTTP

7.5.2.3.1 General

The media storage client uses HTTP for a standalone data file download from the MCData content server.

7.5.2.3.2 Procedure for file download from the MCData content server

The procedure in figure 7.5.2.3.2-1 describes the case where an MCData user is downloading a file from the media storage function of the MCData content server.

Pre-conditions:

1. The MCData user on the media storage client is registered for receiving MCData service.

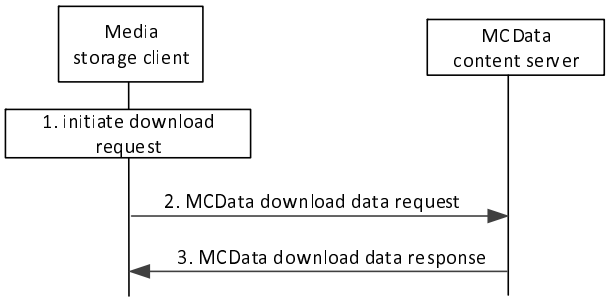

Figure 7.5.2.3.2-1: File download using HTTP

1. The user at the media storage client initiates a file download request available at the indicated URL.
2. The file available at the URL (received in MCData FD request or MCData group standalone FD request) is requested to be downloaded by the media storage client from the media storage function on the MCData content server using a MCData download data request. If emergency indicator is set in received in MCData FD request or MCData group standalone FD request, the media storage client sets emergency indicator in MCData download data request.

NOTE: The media storage client can perform partial download requests to complete the missing parts after an incomplete file transfer.

3. The media storage function on the MCData content server may apply reception control policy and provides a MCData download data response including the file to the media storage client.

7.5.2.3.3 Procedure for file download including request of network resources with required QoS

The procedure in figure 7.5.2.3.3-1 describes the case where an MCData client sends a request to the MCData server for the download of a file from the media storage client on the MCData client to the media storage function on the MCData content server. The MCData server can, therefore, request network resources with the required QoS for the corresponding file download.

Pre-conditions:

1. The MCData user on the MCData client is registered on the MCData server for receiving MCData service.
2. The MCData client has been requested to download a file using HTTP and has received the corresponding file URL (via an MCData FD request or MCData group standalone FD request).
3. The MCData client is required to download a file from the MCData content server over network resources with required QoS.

NOTE 1: It is implementation specific whether an MCData system enables that network resources with required QoS are required for file downloads.

4. The MCData client knows its IP address/port to be used for the file download as well as the URI or IP address/port of the target MCData content server.

NOTE 2: How the MCData client knows the IP addresses and ports to be used for the file download is implementation specific and out of the scope of this specification.

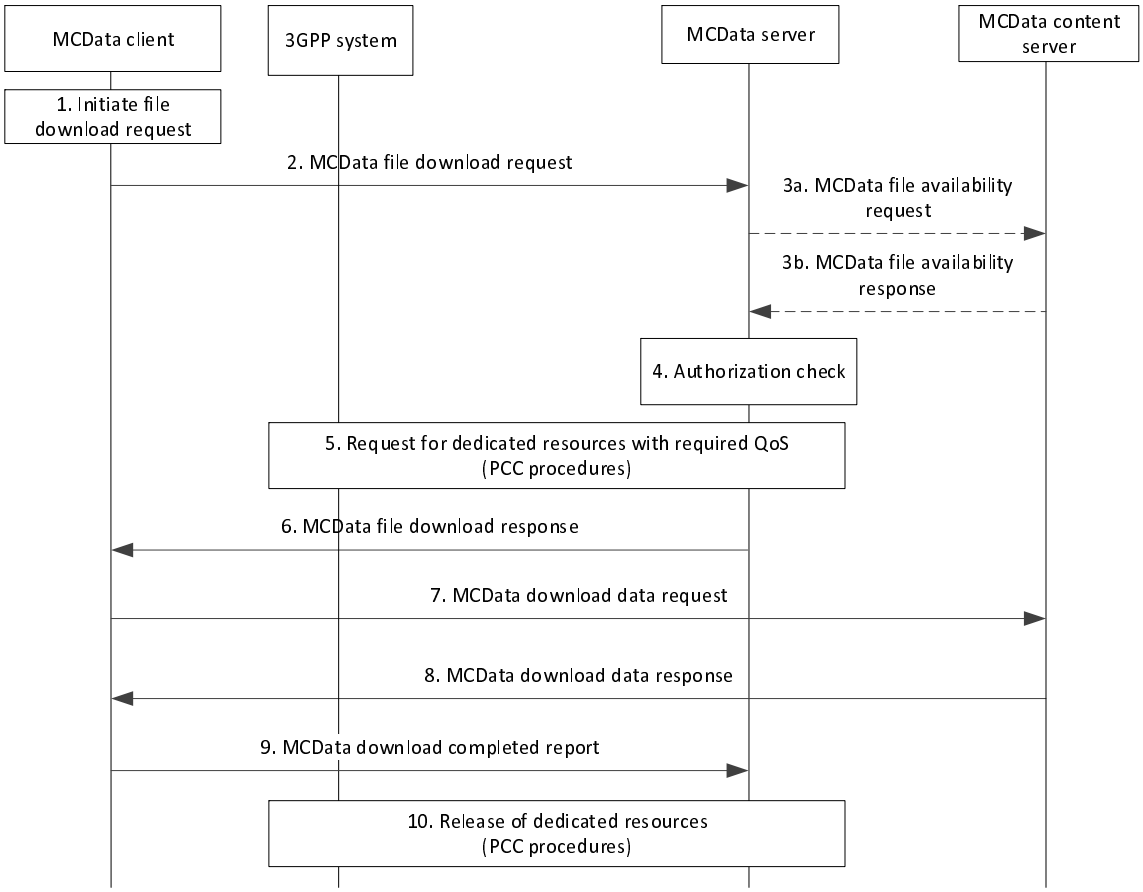

Figure 7.5.2.3.3-1: File download using HTTP over network resources with required QoS

1. The MC user on the MCData client intends to download a file from the MCData content server based on a received MCData FD request or MCData group standalone FD request. If the MCData emergency state is already set for the MCData client, the MCData client sets the emergency indicator in the request.

2. The MCData client sends the MCData file download request to the MCData server. This request contains information about the MCData client (including IP address and port to be used for the file download), and the target MCData content server (including associated URI or IP address, and port). The request also contains the corresponding file URL on the MCData content server.

3. The MCData server may verify, based on the received file URL, whether the file is available in the MCData content server via the MCData-FD-5 reference point. For that, the MCData server sends an MCData file availability request to the MCData content server. Upon the receipt of the request, the MCData content server provides an MCData file availability response to the MCData server. If the MCData server identifies that the corresponding file is not available in the MCData content server, the MCData server provides a response to the MCData client indicating that the file download request cannot proceed due to the unavailability of the file in the MCData content server.

4. The MCData server verifies that the corresponding MCData client is authorized to download the file from the corresponding MCData content server.

5. If the MCData client is authorized for the file download, the MCData server sends a request to the 3GPP system for the allocation of network resources with the required QoS for the corresponding file download

communication between the MCData client and the MCData content server. For that, the MCData server performs policy and charging control (PCC) procedures, e.g., over the Rx reference point as described in 3GPP TS 23.203 [14] for the case of an EPS system.

6. The MCData server sends a MCData file download response to the MCData client indicating whether it can proceed with the file download from the MCData content server.

7. The media storage client on the MCData client sends an MCData download data request to the media storage function on the MCData content server to download the corresponding file.

8. The MCData content server provides an MCData download data response to the MCData client including the file for the case of a successful response.

9. The MCData client provides to the MCData server an MCData download completed report indicating that the file download is completed.

10. Based on the MCData download completed report, the MCData server requests to the 3GPP system to release the network resources allocated for the corresponding file download.

7.5.2.4 One-to-one file distribution using HTTP

7.5.2.4.1 General

The MCData client uses HTTP file distribution to download a file that is uploaded by another MCData client. The procedure is appropriate for both mandatory and non-mandatory download cases. The target MCData user may be addressed using the functional alias that can be shared with other MCData users.

7.5.2.4.2 Procedure for single MCData system

The procedure in figure 7.5.2.4.2-1 describes the case where a MCData user is initiating one-to-one data communication for sending file to the other MCData user, with or without download completed report request.

Pre-conditions:

1. The MCData users on the MCData client 1 and the MCData client 2 are already registered for receiving MCData service.

2. The file to be distributed is uploaded to media storage function on MCData content server using the procedures defined in subclause 7.5.2.2.

3. The MCData client may have activated functional alias to be used.

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

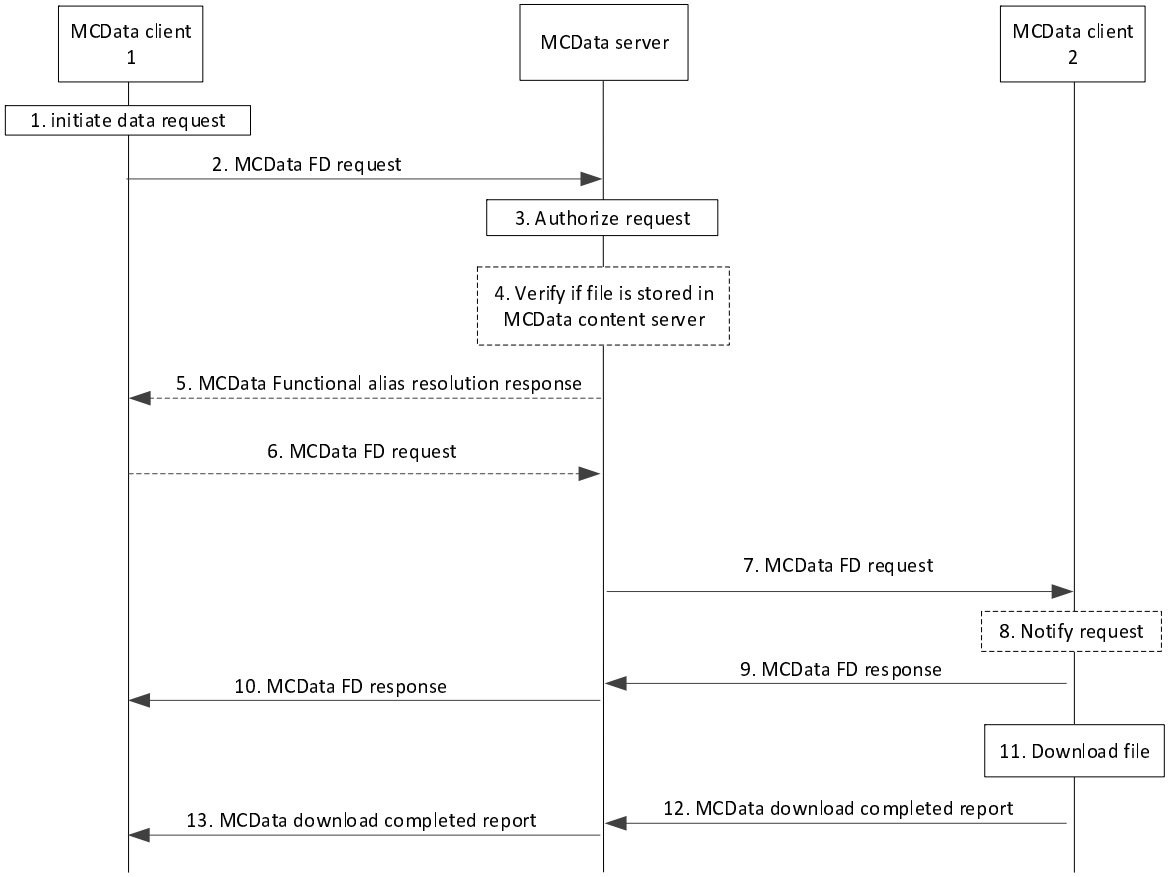

Figure 7.5.2.4.2-1: One-to-one file distribution using HTTP

1. The user at the MCData client 1 initiates a file distribution request to the chosen MCData user.

2. The MCData client 1 sends a MCData FD request towards the MCData server. The MCData FD request contains content payload in the form of file URL and may contain the file metadata information. The MCData FD request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData FD request contains conversation identifier for message thread indication. The MCData FD request may include additional implementation specific information in the application metadata container. If MCData user at MCData client 1 has requested to mandatory download at the recipient side, then MCData FD request contains mandatory download indication. If the MCData user at MCData client has requested to deposit the file content into his/her MCData message store account, then MCData FD request contains deposit file indication set. The MCData FD request may contain download completed report indication if selected by the user at MCData client 1. The MCData user at MCData client 1 may include a functional alias within the FD data transfer and may address the target MCData client 2 using a functional alias.

   a) If the MCData user at the MCData client 1 initiates an MCData emergency file distribution using HTTP or MCData emergency state is already set for the MCData client 1 (due to previously triggered MCData emergency alert):

      i) The MCData FD request shall contain emergency indicator; and

      ii) If MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData FD request and that the size of the file is below maximum data size for FD from the service configuration. MCData server verifies whether the provided functional alias of MCData client 1, if present, can be used and has been activated for the user. If functional alias is used to address that target MCData user, the MCData server resolves the

functional alias to the corresponding MCData IDs for which the functional alias is active and proceed with step 4 otherwise proceed with step 6.

NOTE 2: If the MCData server detects that the functional alias used as the target of the MCData FD request is simultaneously active for multiple MCData users, then the MCData server can proceed by selecting an appropriate MCData ID based on some selection criteria. The selection of an appropriate MCData ID is left to implementation. These selection criteria can include rejection of the MCData FD request, if no suitable MCData ID is selected.

4. The MCData server may verify whether the corresponding file is available in the MCData content server (not shown in the figure) via the MCData-FD-5 reference point using the received file URL in the MCData FD request. For that, the MCData server sends an MCData file availability request to the MCData content server. Upon the receipt of the request, the MCData content server provides an MCData file availability response to the MCData server. If the MCData server identifies that the corresponding file is not available in the MCData content server, the MCData server provides a response to the MCData client 1 indicating that the file distribution request cannot proceed due to the unavailability of the file in the MCData content server.

5. The MCData server responds back to MCData client 1 with a functional alias resolution response message that contains the resolved MCData ID.

6. If the MCData server replies with a MCData functional alias resolution response message, the MCData client 1 sends a new MCData FD request towards the resolved MCData ID.

7. MCData server initiates the MCData FD request towards MCData client 2. The MCData FD request towards the MCData user contains an emergency indicator if it is present in the received MCData FD request from MCData client 1. If the deposit file indication information element is set to true in the received MCData FD request, MCData server shall follow the procedure as defined in the subclause 7.13.3.8 with the retrieve file indication element set to true while depositing this MCData communication to the MCData message store account of the user at MCData client 1.

NOTE 3: MCData client 2 does not set its emergency state as a result of receiving the MCData FD request containing the emergency indicator.

8. The receiving MCData client 2 notifies the user about the incoming MCData FD request (including file metadata, if present) which may be either accepted or rejected or ignored.

9. The MCData user 2 may provide a response (accept or reject) or not (ignore) to the notification, then MCData client 2 sends the MCData FD response to the MCData server. The MCData client 2 automatically sends an accepted MCData FD response when the received request includes a mandatory download indication.

10. The MCData server forwards the MCData FD response to the MCData client 1.

11. The Media storage client on the MCData client 2 downloads the file from the MCData content server using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCData user 2 subsequent action. The MCData client 2 records file download completed and notifies the MCData user 2.

12. The MCData client 2 provides an MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

13. The received MCData file download completed report from the MCData client 2 may be stored by the MCData server for download history interrogation from authorized MCData users. The MCData download completed report is sent by the MCData server to the MCData user at MCData client 1, if requested by the MCData client 1.

7.5.2.4.3 Procedure with interconnection between MCData systems

The procedure in figure 7.5.2.4.3-1 describes the case where a MCData user initiates a one-to-one data communication for sending a file to another MCData user where that other MCData user is receiving MCData service on a partner MCData system, and where interconnection is in use between the two MCData systems. In this procedure, the file has not previously been downloaded in the partner MC system.

Pre-conditions:

1. The MCData users on the MCData client 1 and the MCData client 2 are already service authorized and receiving MCData service. MCData client 1 is receiving service on its primary MCData system, and MCData client 2 is receiving MCData service in the partner MCData system of MCData client 1.

2. The file to be distributed has been uploaded to the media storage function on the MCData content server in the primary MCData system of MCData client 1 using the procedures defined in subclause 7.5.2.2.

3. There is a service agreement between the primary and partner MCData systems to allow files to be shared between MCData content servers in the two systems.

4. The MCData client may have an activated functional alias to be used.

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

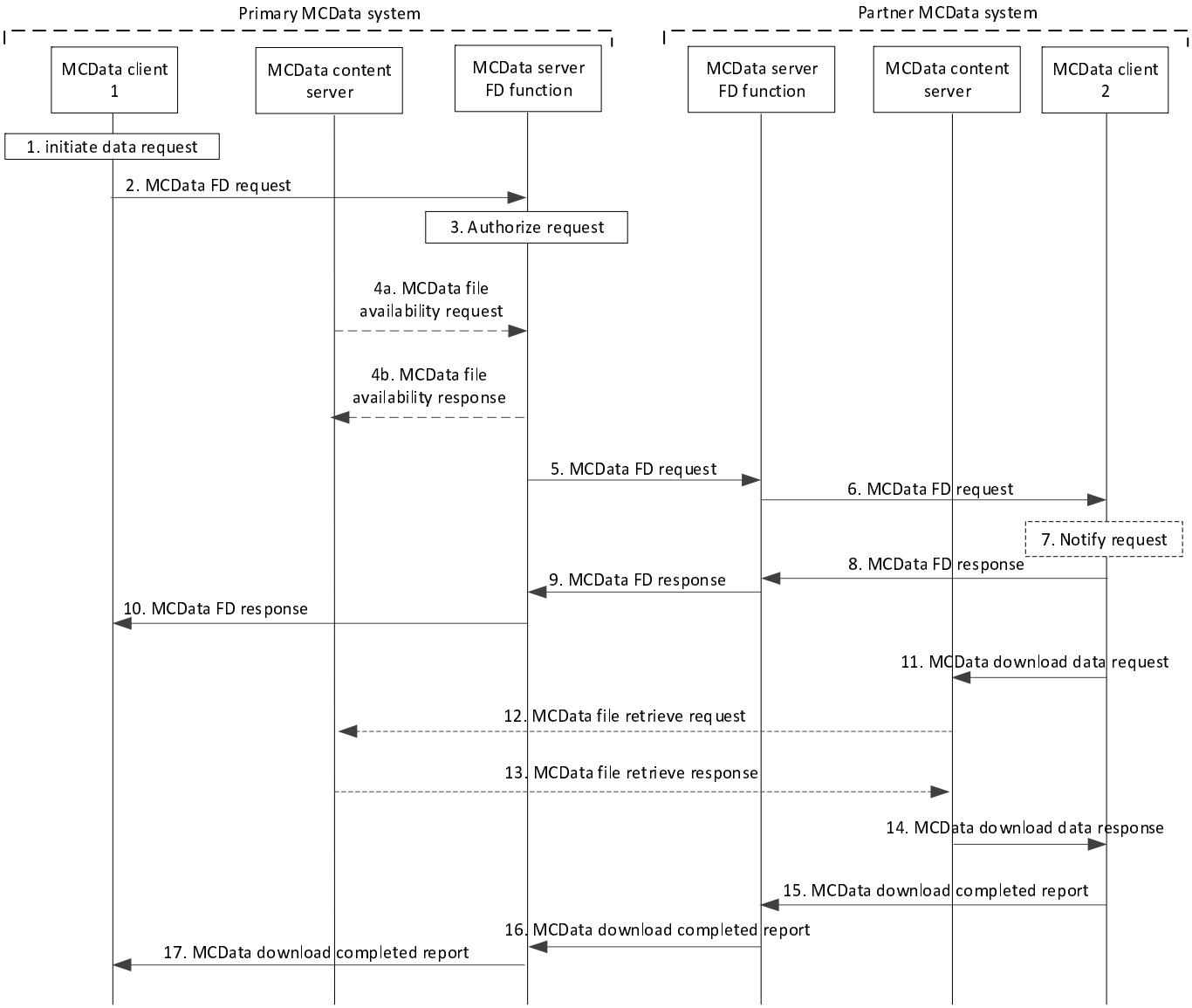

Figure 7.5.2.4.3-1: One-to-one file distribution using HTTP with interconnection

1. The user at the MCData client 1 initiates a file distribution request to the MCData user at MCData client 2.

2. MCData client 1 sends an MCData FD request towards the primary MCData server. The MCData FD request contains content payload in the form of a file URL with the necessary access authorization information and may contain the file metadata information. The MCData FD request indicates the target MCData user for the one-to-one data communication. The MCData FD request contains a conversation identifier for message thread indication. If the MCData user at MCData client 1 has requested to mandatory download at the recipient side,

then the MCData FD request contains the mandatory download indication. The MCData FD request may contain a request for a download completed report indication if selected by the user at MCData client 1. The MCData user at MCData client 1 may include a functional alias within the FD data transfer and may address the target MCData client 2 using a functional alias.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send the MCData FD request and that the size of the file is below maximum data size for FD from the service configuration. MCData server verifies whether the provided functional alias of MCData client 1, if present, can be used and has been activated for the user.

4. The MCData server may verify whether the corresponding file is available in the MCData content server via the MCData-FD-5 reference point using the received file URL in the MCData FD request. For that, the MCData server sends an MCData file availability request to the MCData content server. Upon the receipt of the request, the MCData content server provides an MCData file availability response to the MCData server. If the MCData server identifies that the corresponding file is not available in the MCData content server, the MCData server provides a response to the MCData client 1 indicating that the file distribution request cannot proceed due to the unavailability of the file in the MCData content server.

5. The MCData server in the primary MCData system initiates the MCData FD request towards the MCData server in the partner MCData system, which contains the URL of the file which is stored in the primary MCData content server. The request includes the necessary access authorization information as MCData client 2 will retrieve the file while receiving service in the partner MCData system.

NOTE 1: The contents of and mechanisms to use the authorization information are outside the scope of the present document.

NOTE 2: With the use of the functional alias for addressing the target MCData clients, the partner MCData system is to be determined by the primary MCData system.

6. If functional alias is used to address that target MCData user, the MCData server in the partner MCData system resolves the MCData IDs of the functional alias. The resulting list contains all associated MCData IDs/MCData users that may share this functional alias. The MCData server in the partner MCData system now checks which MCData users have FD capabilities and which are authorized to receive a file. The partner MCData server sends the MCData FD request to the MCData users determined. The file URL being provided in MCData FD request to the MCData users determined is prepended with server URI of the partner MCData content server, such that the URL identifies a file location in the partner MCData content server.

NOTE 3: Determination of the target MCData client is based on the associated MCData IDs that share a functional alias and other criteria.

7. The receiving MCData client 2 may notify the user about the incoming MCData FD request (including file metadata, if present) which may be either accepted, rejected or ignored.

8. The MCData user 2 may provide a response (accept or reject) or not (ignore) to the notification, then the MCData client 2 sends the MCData FD response to the partner MCData server. The MCData client 2 automatically sends an accepted MCData FD response when the received request includes a mandatory download indication.

9. The partner MCData server forwards the MCData FD response to the MCData server in the primary MCData system.

10. The primary MCData server forwards the MCData FD response to MCData client 1.

11. MCData client 2 requests the file from the partner MCData content server.

NOTE 4: Step 11 may occur any time after step 8, before or after steps 9 and 10.

12. The partner MCData content server checks whether the file is stored locally, and if this is not the case, sends an MCData file retrieve request to the primary MCData content server. The MCData file retrieve request contains the URL of the file location in the primary MCData system, generated by removing the prepended local path from the requested URL.

NOTE 5: The means of proving authorization for the request is outside the scope of the present document.

13. The primary MCData content server responds to the partner MCData content server with an MCData file retrieve response which contains the content of the file to be retrieved. File metadata may include the lifetime of the file. The primary MCData content server records that the file has been sent to the indicated partner MCData system.

NOTE 6: The partner MCData content server may store the local copy of the file in case future requests arise until the expiry time sent from primary MCData system for the file is reached or until a request is received to delete the file.

14. The partner MCData content server sends the file to MCData client 2 in the MCData download data response. MCData client 2 records file download completed and notifies MCData user 2.

15. The MCData client 2 provides an MCData download completed report for reporting file download completed, if this was requested by the user at MCData client 1 in the initial MCData FD request.

16. The MCData download completed report is sent to the primary MCData server. The partner MCData server may store the download completed report for download history interrogation from authorized MCData users in the partner MCData system.

17. The received MCData download completed report is sent by the primary MCData server to the MCData user at MCData client 1, if requested by the MCData client 1. The MCData file download completed report from the MCData client 2 may be stored by the primary MCData server for download history interrogation from authorized MCData users in the primary MCData system.

7.5.2.5 One-to-one file distribution using media plane

7.5.2.5.1 General

The MCData client uses the media plane for a standalone data file download from another MCData client. The procedure is appropriate for both mandatory and non-mandatory download cases. The target MCData user may be addressed using the functional alias that can be shared with other MCData users.

7.5.2.5.2 Procedure

The procedure in figure 7.5.2.5.2-1 describes the case where an MCData user is initiating one-to-one data communication for sending file to the other MCData user, with or without download completed report request.

Pre-conditions:

1. The MCData users on the MCData client 1 and the MCData client 2 are already registered for receiving MCData service.

2. Optionally, the MCData client may have an activated functional alias to be used.

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

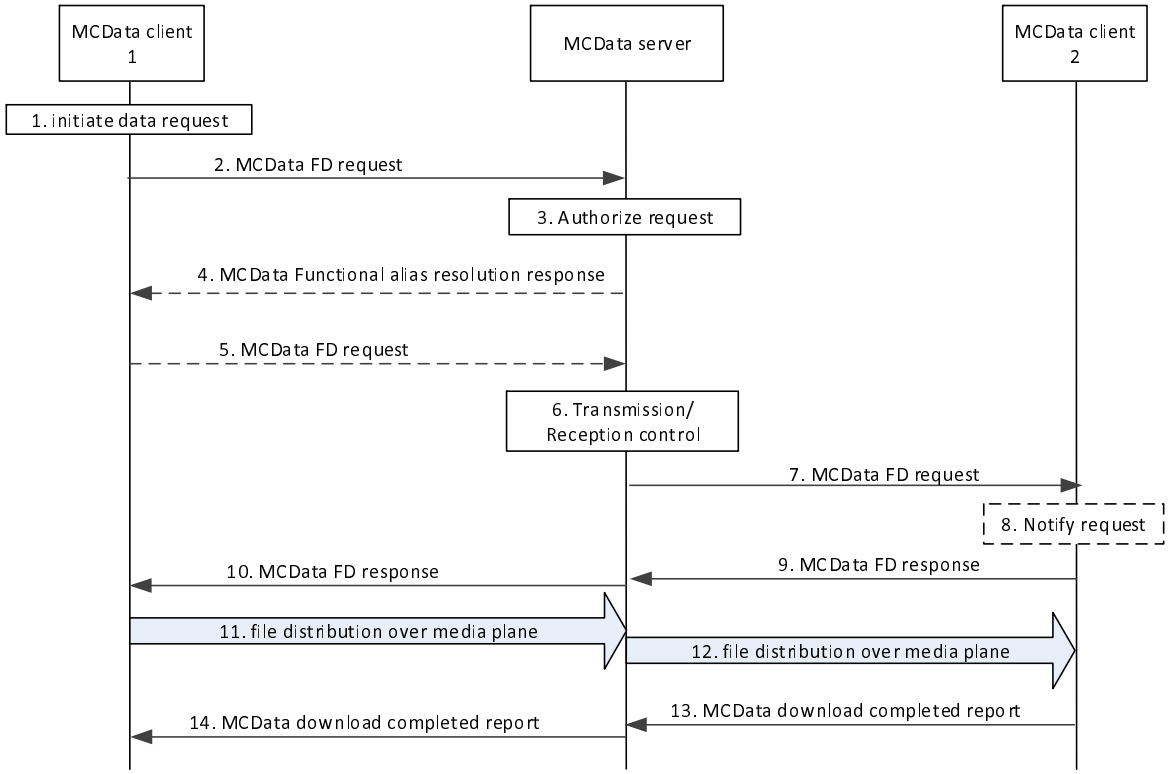

Figure 7.5.2.5.2-1: One-to-one file distribution using media plane

1. The user at the MCData client 1 initiates a file distribution request to the chosen MCData user.

2. MCData client 1 sends a MCData FD request towards the MCData server. File metadata information is included in the SDP. The MCData FD request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData FD request contains conversation identifier for message thread indication. The MCData FD request may include additional implementation specific information in the application metadata container. MCData FD request may contain mandatory download indication. The MCData FD request may contain download completed report indication if selected by the user at MCData client 1. MCData user at MCData client 1 may include a functional alias within the FD data transfer and may address the target MCData client 2 using a functional alias.

   a) If the MCData user at the MCData client 1 initiates an MCData emergency file distribution communication or MCData emergency state is already set for the MCData client 1 (due to previously triggered MCData emergency alert):

      i) The MCData FD request shall contain emergency indicator; and

      ii) If MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData FD request. MCData server verifies whether the provided functional alias of MCData client 1, if present, can be used and has been activated for the user. If functional alias is used to address that target MCData user, the MCData server resolves the functional alias to the corresponding MCData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6.

NOTE 2: If the MCData server detects that the functional alias used as the target of the MCData FD request is simultaneously active for multiple MCData users, then the MCData server can proceed by selecting an appropriate MCData ID based on some selection criteria. The selection of an appropriate MCData ID is left to implementation. These selection criteria can include rejection of the MCData FD request, if no suitable MCData ID is selected.

4. The MCData server responds back to MCData client 1 with a functional alias resolution response message that contains the resolved MCData ID.

5. If the MCData server replies with a MCData functional alias resolution response message, the MCData client 1 sends a new MCData FD request towards the resolved MCData ID.

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

7. MCData server initiates the MCData FD request towards the MCData users determined. The MCData FD request towards the MCData user contains the emergency indicator if it is present in the received MCData FD request from MCData client 1.

NOTE 3: MCData client 2 does not set its emergency state as a result of receiving the MCData FD request containing the emergency indicator.

8. The receiving MCData client 2 notifies the user about the incoming MCData FD request which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCData FD request an accepted response is assumed.

9. If the target MCData user 2 provides a response (accept or reject) to the notification, then MCData client 2 sends the MCData FD response to the MCData server. MCData client 2 automatically sends accepted MCData FD response when the incoming request included mandatory download indication.

10. MCData server forwards the MCData FD response from MCData client 2 back to MCData client 1.

11. MCData client 1 distributes the file over the established media plane to MCData server.

12. MCData server distributes the file received from MCData client 1 to MCData client 2 over the established media plane. File download report is shared by the MCData client 2, if requested by the user at MCData client 1. After file transaction is completed, the media plane is released. The MCData client 2 records file download completed and notifies MCData user 2.

NOTE 4: MCData server is not required to wait for the complete download of file from MCData client 1 prior to initiating file distribution to MCData client 2.

13. MCData client 2 initiates a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

14. The MCData file download completed report from MCData client may be stored by the MCData server for download history interrogation from the authorized MCData users. MCData download completed report is sent by the MCData server to the user at MCData client 1.

7.5.2.6 Group standalone file distribution using HTTP

7.5.2.6.1 General

The initiation of a group standalone FD using HTTP to a selected group, results in affiliated group members receiving the file data.

7.5.2.6.2 Procedure

The procedure in figure 7.5.2.6.2-1 describes the case where a MCData user is initiating group standalone data communication for sending a file to multiple MCData users, with or without download completed report request from the MCData user.

Pre-conditions:

1. The MCData users on the MCData clients 1 to n belong to the same MCData group and are already registered for receiving MCData service and affiliated to the group.

2. The file to be distributed is uploaded to the media storage function on the MCData content server using the procedures defined in subclause 7.5.2.2.

3. The MCData client may have an activated functional alias to be used.

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

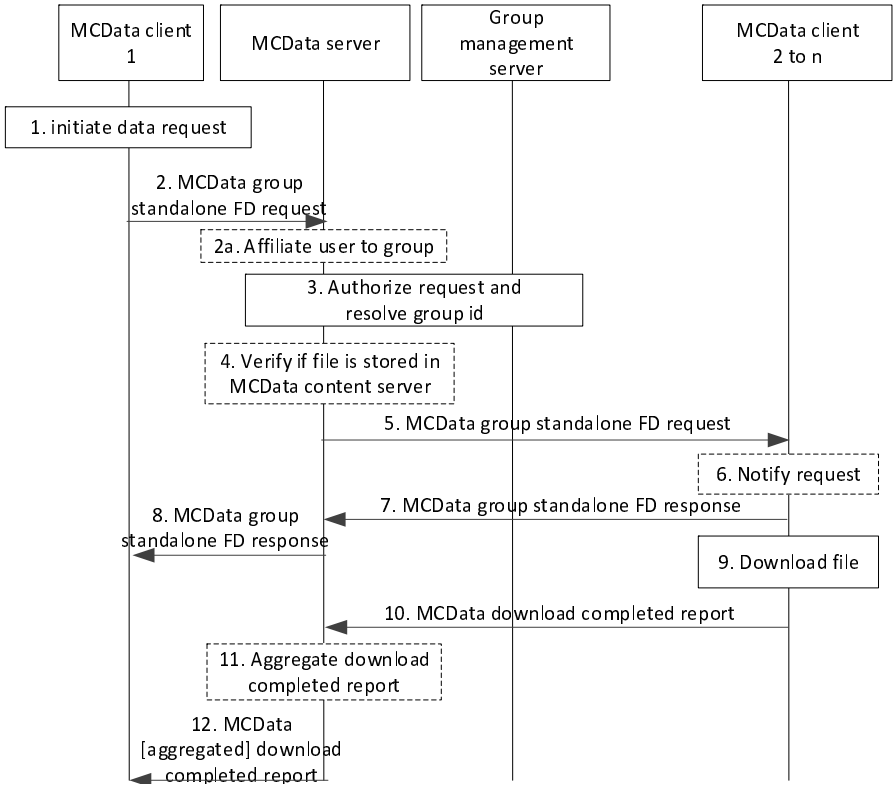

Figure 7.5.2.6.2-1: Group standalone FD using HTTP

1. The user at the MCData client 1 initiates a file distribution request to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. The MCData client 1 sends a MCData group standalone FD request towards the MCData server. The MCData FD request contains content payload in the form of file URL and may contain the file metadata information. The MCData group standalone data request contains either the selected MCData group ID or the target recipients as selected by the user at MCData client 1. The MCData group standalone FD request contains conversation identifier for message thread indication. The MCData group standalone FD request may include additional implementation specific information in the application metadata container. If MCData user at MCData client 1 has requested to mandatory download at the recipient side, then MCData group standalone FD request contains mandatory download indication. The MCData group standalone FD request may contain a download completed report indication if selected by the user at MCData client 1. The MCData user at MCData client 1 may include a functional alias within the FD data transfer. If the MCData user at MCData client has requested to deposit the file content into his/her MCData message store account, then MCData FD request contains deposit file indication set.

   If the MCData user at MCData client 1 initiates an MCData emergency FD communication or the MCData emergency state is already set for the MCData client 1 (due to a previously triggered MCData emergency alert):

   i) the MCData group standalone FD request shall contain an emergency indicator;

   ii) the MCData group standalone FD request shall set an alert indicator if configured to send an MCData emergency alert while initiating an MCData group standalone FD request for the emergency FD communication; and

   iii) if the MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

If the MCData user at MCData client 1 initiates an MCData imminent peril FD communication:

i) the MCData group standalone FD request shall contain an imminent peril indicator.

2a. If either emergency indicator or imminent peril indicator is present in the received MCData group standalone FD request, the MCData server implicitly affiliates MCData client 1 to the MCData group if the client is not already affiliated.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send an MCData group standalone FD request and that the size of the file is below maximum data size for FD from the group configuration. MCData server verifies whether the provided functional alias, if present, can be used and has been activated for the user. If the MCData group ID is used, the MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server.

   i) If an emergency indicator is present in the received MCData group standalone FD request and if the MCData group is not in the in-progress emergency state, the MCData group is considered to be in the in-progress emergency state until cancelled; and

NOTE 2: While the MCData group is in the in-progress emergency state, all types of MCData communications within the group are processed as emergency group communications by the MCData server. MCData group members that are not in the emergency state do not indicate emergency in group communication requests.

   ii) If an imminent peril indicator is present in the received MCData group standalone FD request and if the MCData group is not in the in-progress imminent peril state, the MCData group is considered to be in the in-progress imminent peril state until cancelled.

4. The MCData server may verify whether the corresponding file is available in the MCData content server (not shown in the figure) via the MCData-FD-5 reference point using the received file URL in the MCData group standalone FD request. For that, the MCData server sends an MCData file availability request to the MCData content server. Upon the receipt of the request, the MCData content server provides an MCData file availability response to the MCData server. If the MCData server identifies that the file is not available in the MCData content server, the MCData server provides a response to the MCData client 1 indicating that the file distribution request cannot proceed due to the unavailability of the file in the MCData content server and skip rest of the steps. If the deposit file indication information element is set to true in the received MCData FD request, MCData server shall follow the procedure as defined in the subclause 7.13.3.8 with the retrieve file indication element set to true while depositing this MCData communication to the MCData message store account of the user at MCData client 1.

5. MCData server initiates the MCData group standalone FD request towards each MCData user determined in step 3. The MCData group standalone FD request towards each MCData client contains:

   i) an emergency indicator if it is present in the received MCData group standalone FD request from the MCData client 1;

   ii) an imminent peril indicator if it is present in the received MCData group standalone FD request from the MCData client 1; and

   iii) an alert indicator if requested to initiate an emergency alert in the received MCData group standalone FD request from the MCData client 1.

6. The receiving MCData clients 2 to n notify the user about the incoming MCData group standalone FD request (including file metadata, if present) which may be either accepted or rejected or ignored.

7. If the target MCData user on MCData clients 2 to n provides a response (accept or reject) to the notification, then respective MCData client sends the MCData group standalone FD response to the MCData server. MCData client 2 to n automatically sends accepted MCData group standalone FD response when the incoming request included mandatory download indication.

8. The MCData server forwards the MCData group standalone FD responses to the MCData client 1.

NOTE 3: Step 8 can occur at any time following step 5, and prior to step 9 depending on the conditions to proceed with the file transmission.

9. The media storage client on the MCData client(s) accepting the request downloads the file from the MCData content server (not shown in the figure) using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCData user subsequent action. The MCData clients successfully receiving the file through the media storage clients, record file download completed and notify the MCData users.

10. The MCData clients, receiving the file through the media storage client, provide MCData download completed reports for reporting file download completed, if requested by the user at MCData client 1.

11. The MCData file download completed reports from MCData clients may be stored by the MCData server for download history interrogation from the authorized MCData users. The MCData file download completed report from each MCData user may be aggregated.

12. Aggregated or individual MCData download completed reports are sent by the MCData server to the MCData user at MCData client 1, if requested by the MCData client 1.

7.5.2.7 Group standalone file distribution using media plane

7.5.2.7.1 General

The initiation of a group standalone FD using media plane to a selected group, results in affiliated group members receiving the file data.

7.5.2.7.2 Procedure

The procedure in figure 7.5.2.7.2-1 describes the case where an MCData user is initiating group standalone data communication for sending file to multiple MCData users, with or without download completed report request.

Pre-conditions:

1. The MCData users on the MCData client 1 to n belong to the same group and are already registered for receiving MCData service and affiliated.

2. Optionally, the MCData client may have an activated functional alias to be used.

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

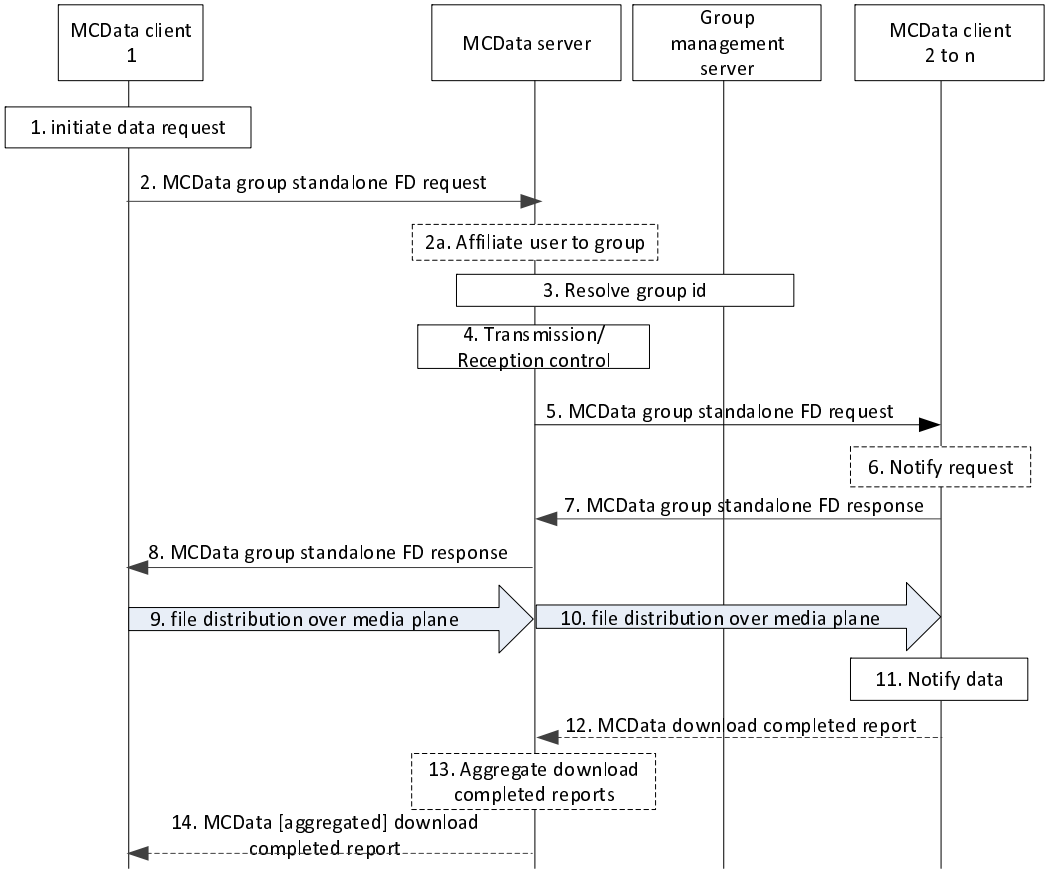

Figure 7.5.2.7.2-1: Group standalone FD using media plane

1. The user at the MCData client 1 initiates a file distribution request to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. MCData client 1 sends a MCData group standalone FD request towards the MCData server. File metadata information is included in the SDP. The MCData group standalone data request contains target recipient(s) as selected by the user at MCData client 1. The MCData group standalone FD request contains conversation identifier for message thread indication. The MCData group standalone FD request may include additional implementation specific information in the application metadata container. MCData group standalone FD request may contain mandatory download indication. The MCData group standalone FD request may contain download completed report indication if selected by the user at MCData client 1. MCData user at MCData client 1 may include a functional alias within the FD data transfer.

   If the MCData user at MCData client 1 initiates an MCData emergency file distribution communication or the MCData emergency state is already set for the MCData client 1 (due to a previously triggered MCData emergency alert):

   i) the MCData group standalone FD request shall contain an emergency indicator;

   ii) the MCData group standalone FD request shall set an alert indicator if configured to send an MCData emergency alert while initiating an MCData group standalone FD request for the emergency file distribution service communication; and

   iii) if the MCData emergency state is not set already, MCData client 1 sets its MCData emergency state. The MCData emergency state is retained until explicitly cancelled.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

   If the MCData user at MCData client 1 initiates an MCData imminent peril file distribution communication:

   i) the MCData group standalone FD request shall contain an imminent peril indicator.

2a. If either emergency indicator or imminent peril indicator is present in the received MCData group standalone data request, the MCData server implicitly affiliates MCData client 1 to the MCData group if the client is not already affiliated.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData group standalone FD request. MCData server verifies whether the provided functional alias, if present, can be used and has been activated for the user. The MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server.

   i) If an emergency indicator is present in the received MCData group standalone FD request and if the MCData group is not in the in-progress emergency state, the MCData group is considered to be in the in-progress emergency state until cancelled; and

NOTE 2: While the MCData group is in the in-progress emergency state, all types of MCData communications within the group are processed as emergency group communications by the MCData server. MCData group members that are not in the emergency state do not indicate emergency in group communication requests.

   ii) If an imminent peril indicator is present in the received MCData group standalone FD request and if the MCData group is not in the in-progress imminent peril state, the MCData group is considered to be in the in-progress imminent peril state until cancelled.

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

5. MCData server initiates the MCData group standalone FD request towards each MCData user determined in step 3. The MCData group standalone data request towards each MCData client contains:

   i) an emergency indicator if it is present in the received MCData group standalone FD request from the MCData client 1;

   ii) an imminent peril indicator if it is present in the received MCData group standalone FD request from the MCData client 1; and

   iii) an alert indicator if requested to initiate an emergency alert in the received MCData group standalone FD request from the MCData client 1.

6. The receiving MCData clients 2 to n notifies the user about the incoming MCData group standalone FD request which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCData group standalone FD request an accepted response is assumed.

7. If the target MCData user on MCData clients 2 to n provides a response (accept or reject) to the notification, then the respective MCData client sends the MCData group standalone FD response to the MCData server. MCData client 2 to n automatically sends accepted MCData group standalone FD response when the incoming request included mandatory download indication.

8. MCData server forwards the MCData group standalone FD response to the MCData client 1.

NOTE 3: Step 8 can occur at any time following step 5, and prior to step 9 depending on the conditions to proceed with the file transmission.

9. MCData client 1 and MCData server have successfully established media plane for file transmission and the MCData client 1 transmits the file data.

10. MCData server distributes the file received from MCData client 1 to MCData clients 2 to n over the established media plane. Distribution of file can be via unicast or via MBMS bearer(s). For distribution via MBMS bearer(s), the procedure described in subclause 7.3 Use of MBMS transmission (on-network) is executed. File download report is shared by the receiving MCData clients, if requested by the user at MCData client 1. After file transaction is completed, the media plane is released.

NOTE 4: MCData server is not required to wait for the complete download of file from MCData client 1 prior to initiating file distribution to MCData client 2.

11. The MCData clients successfully receiving the file, records file download completed and notifies MCData user.

12. MCData client 2 initiates a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

13. The MCData file download completed report(s) from MCData client(s) may be stored by the MCData server for download history interrogation from the authorized MCData users. The MCData file download completed report from each MCData user may be aggregated.

14. Aggregated or individual MCData file download completed report is sent to the disposition requesting user at MCData client 1.

7.5.2.8 File removal using HTTP by authorized user

7.5.2.8.1 General

The media storage client uses HTTP to remove a file that was previously uploaded to the MCData content server.

7.5.2.8.2 Procedure for single MCData system

The procedure in figure 7.5.2.8.2-1 describes the case where a MCData user is removing the file that was previously uploaded to the MCData content server.

Pre-conditions:

1. The MCData user on the media storage client is registered for receiving MCData service.
2. The file has been successfully uploaded by the MCData user using the procedures defined in subclause 7.5.2.2.
3. The MCData content server has the ability to verify if the requesting MCData user is authorised to remove.

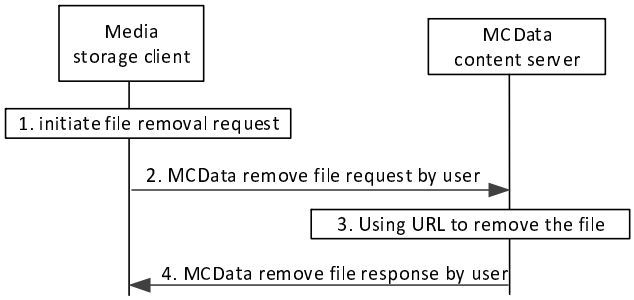

Figure 7.5.2.8.2-1: File removal using HTTP by authorised user

1. The user on the media storage client decides to remove a file that was previously uploaded.
2. The URL of the file to be removed is included in the request sent to the media storage function on the MCData content server.
3. The MCData content server remove the file indicated by the URL.
4. The MCData content server informs the media storage client if the file is successfully removed.

Editor's note: It is FFS if and how the recipients of the file URL need to be notified if the file is no longer available to be downloaded.

7.5.2.8.3 Procedure for interconnection between MCData systems

The procedure in figure 7.5.2.8.3-1 describes the case where an MCData user removes the file that was previously uploaded to the primary MCData system MCData content server, and where the file has been made available in the partner MCData system MCData content server.

Pre-conditions:

1. The MCData user on the media storage client is registered for receiving MCData service.
2. The file has previously been uploaded to the MCData content server in the primary MCData system of MCData client 1.
3. The file has been successfully transferred to the MCData content server in the partner MCData system.

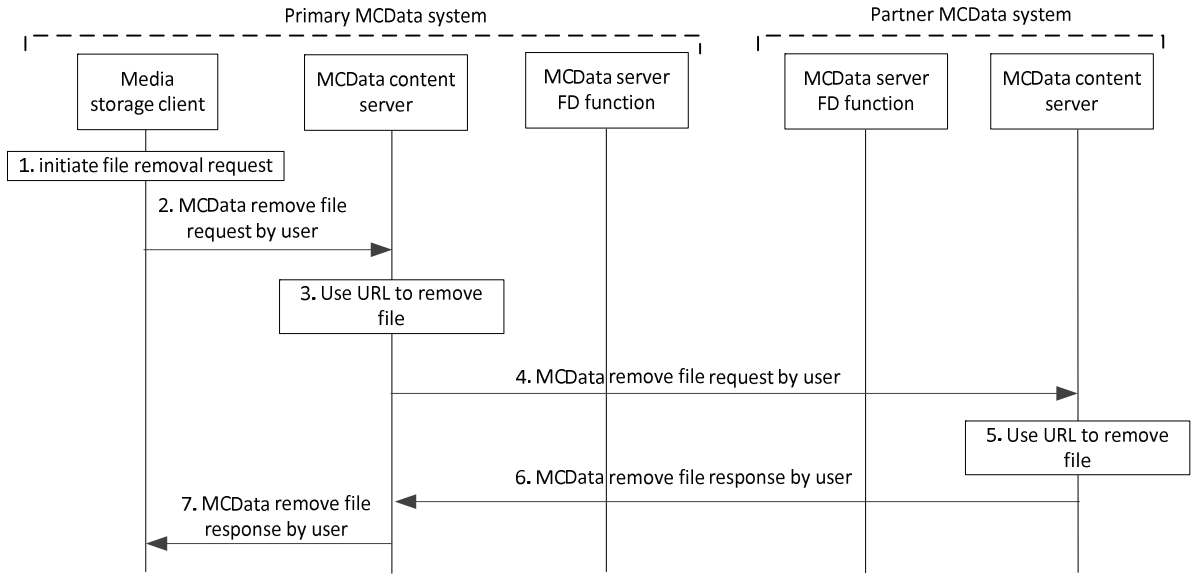

Figure 7.5.2.8.3-1: File removal using HTTP by authorized user

1. The user on the media storage client decides to remove a file that was previously uploaded.
2. The URL of the file to be removed is included in the request sent to the media storage function on the primary MCData content server.
3. The primary MCData content server removes the file indicated by the URL.

NOTE: Step 3 may occur at any time following step 2 and before step 6.

4. As the primary MCData content server has recorded that the file has previously been sent to the partner MCData system, the primary MCData content server sends the MCData remove file request by user to the partner MCData content server, containing the URL of the file which was stored on the primary MCData content server.
5. The partner MCData content server removes the file indicated by the URL.
6. The partner MCData content server informs the primary MCData content server that the file has been successfully removed.
7. The primary MCData content server informs the media storage client if the file is successfully removed.

Editor's note: It is FFS if and how the recipients of the file URL need to be notified if the file is no longer available to be downloaded

7.5.2.9 Void

7.5.2.10 Group standalone file distribution using the MBMS download delivery method

7.5.2.10.1 General

The initiation of a group standalone FD to a selected group results in affiliated group members receiving the file data over MBMS.

The first steps of the procedure are identical to the procedure Group standalone file distribution using HTTP (7.5.2.6). Based on the density and distribution of target group members, the MCData server may decide to deliver the file over MBMS.

The MBMS download delivery method is described in clause 7 of 3GPP TS 26.346 [21].

7.5.2.10.2 Procedure

The procedure in figure 7.5.2.10.2-1 describes the case where a MCData user is initiating group standalone data communication for sending a file to multiple MCData users, with or without download completed report request.

Pre-conditions:

1. The MCData users on the MCData client 1 to n belong to the same group and are already registered for receiving MCData service and affiliated.
2. The file to be distributed is uploaded to the media storage function on the MCData content server using the procedure defined in subclause 7.5.2.2.

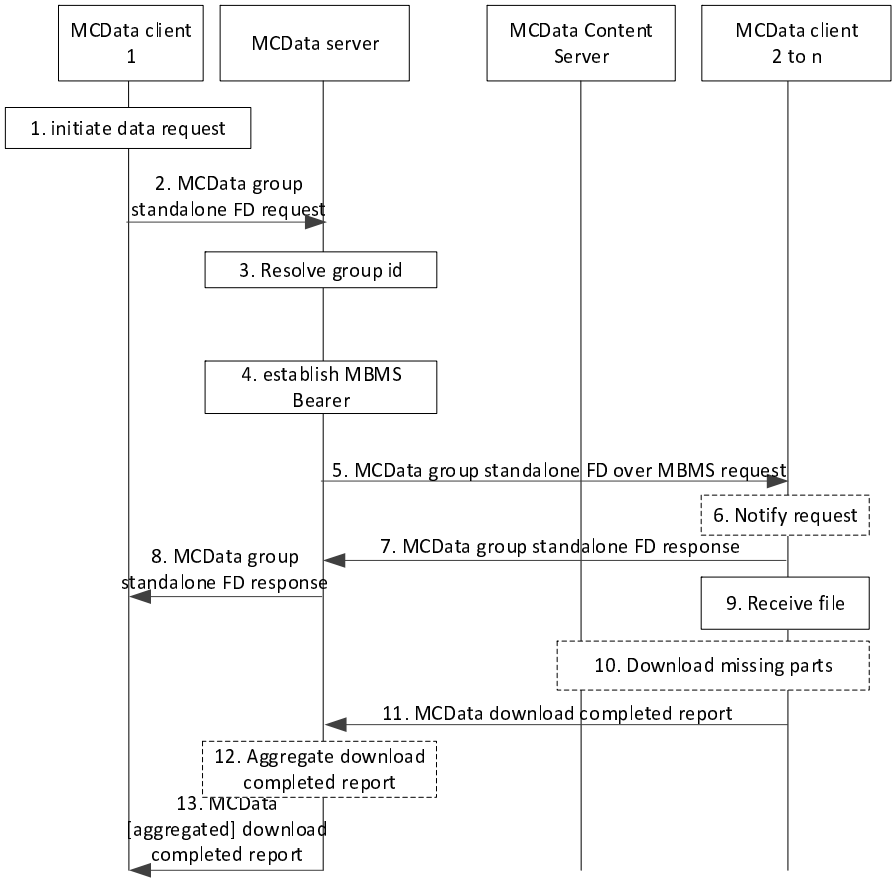

Figure 7.5.2.10.2-1: Group standalone FD using the MBMS download delivery method

1-3. Steps 1-3 are the same as in the procedure for Group standalone FD using HTTP (7.5.2.6).

4. The MCData server executes the procedure described in subclause 7.3.5. The MCData server defines, in the MBMS session properties (subclause 5.4 of 3GPP TS 26.348 [19]), the ingest mode to provide the file into the BM-SC via xMB-U. As described in clause 7.3.5.3.3, the MCData server decides how the file stored in the MCData content server is provided for distribution over the MBMS session.

   If the pull ingest mode is defined, the MCData server may provide in this step the file list. As described in 3GPP TS 26.348 [19], the file list includes, among other information, the file URL to be used by the BM-SC to fetch the file and the earliest fetch time. The earliest fetch time may be configured with a long enough delay so that the MBMS session is established and steps 6 to 8 are executed before the delivery over MBMS. The MCData server can also update the MBMS session with the file list in a later step.

   If the push ingest mode is defined, the MCData server obtains the URL from the BM-SC to be used to push the file via xMB-U. The MCData server ingests the content into the BM-SC after the MBMS session is established and steps 6 to 8 are performed.

5. The MCData server initiates the MCData group standalone FD over MBMS request towards each MCData user determined in step 3. The request is sent over unicast or within an MBMS bearer for application level control signalling.

6. The receiving MCData clients 2 to n notify the users about the incoming MCData group standalone FD request (including file metadata, if present).

7. The MCData clients 2 to n automatically send accepted MCData group standalone FD response when the incoming request included mandatory download indication.

NOTE 1: When the UE is in idle mode, MCData clients may skip step 8.

NOTE 2: If the pull ingest mode was defined in step 5 and the file list has not been provided yet, the MCData server updates the MBMS session with the file list. If the push ingest mode was defined, the MCData server can start pushing the file for distribution over MBMS.

8. The MCData server forwards the MCData group standalone FD responses to the MCData client 1.

NOTE 3: Step 8 can occur at any time following step 6, and prior to step 10 depending on the conditions to proceed with the file transmission.

9. The MCData clients receive the file delivered over MBMS.

10. If losses occurred during the file delivery over MBMS, the MCData clients may download the missing parts using the procedures defined in subclause 7.5.2.3.

NOTE 4: If the file is not successfully received over MBMS, e.g. due to a poor MBMS reception quality, the media storage client of the MCData client(s) can download the file using the procedure defined in subclause 7.5.2.3.

11. The MCData clients, after reception, initiate MCData download completed reports for reporting file download completed, if requested by the user at MCData client 1.

12. The MCData file download completed reports from the MCData clients may be stored by the MCData server for download history interrogation from authorized MCData users. The MCData file download completed report from each MCData user may be aggregated.

13. Aggregated or individual MCData download completed reports are sent by the MCData server to the MCData user at MCData client 1.

7.5.2.11 One-to-one FD communication upgrade to an emergency FD communication

7.5.2.11.1 General

This clause is for adding procedures related to upgrading an existing one-to-one FD communication to an emergency one-to-one FD communication.

7.5.2.11.2 Procedure

The procedure in figure 7.5.2.11.2-1 describes the case where an authorized MCData user is upgrading a MCData one-to-one FD communication to a MCData emergency one-to-one FD communication. This procedure is applicable only when MCData one-to-one file distribution communication is established as described in subclause 7.5.2.5 "One-to-one file distribution using media plane".

Pre-conditions:

1. Both members of the one-to-one FD communication belong to the same MCData system.
2. One-to-one FD communication is already in progress.

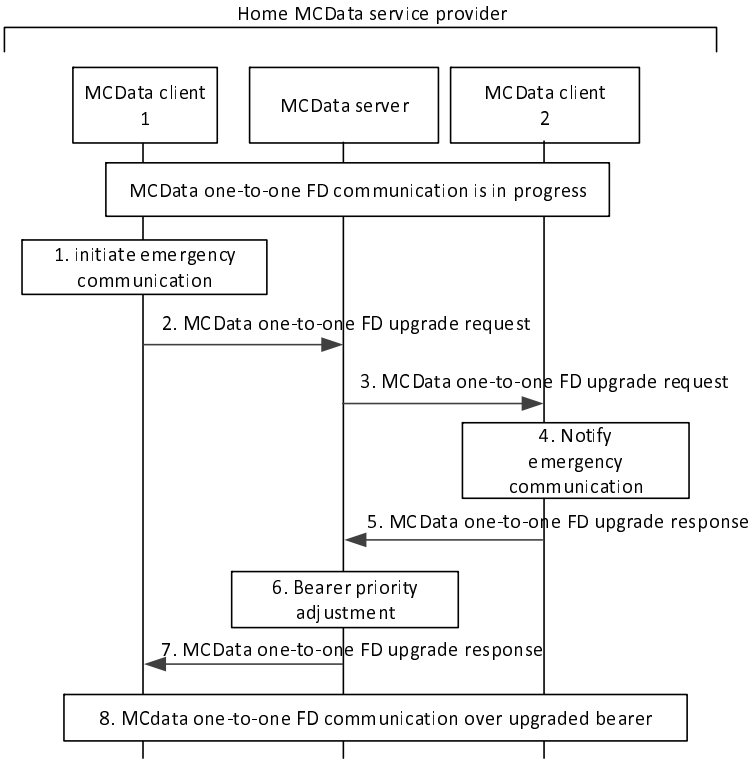

Figure 7.5.2.11.2-1 One-to-one FD communication upgrade to an emergency one-to-one FD communication

1. The MCData user at MCData client 1 initiates an emergency. MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client is retained until explicitly cancelled by the user of MCData client 1.

NOTE 1: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

2. MCData client 1 requests the MCData server to upgrade the MCData one-to-one FD communication to in-progress emergency by sending a MCData one-to-one FD upgrade request.
3. The MCData server sends the MCData one-to-one FD upgrade request towards MCData client 2.

NOTE 2: MCData client 2 does not set its emergency state as a result of receiving the MCData one-to-one FD upgrade request containing the emergency indicator.

4. The MCData user of MCData client 2 is notified of the in-progress emergency of the MCData emergency one-to-one FD communication.
5. The MCData client 2 acknowledges the MCData one-to-one FD upgrade request and sends MCData one-to-one FD upgrade response to the MCData server.

6. The MCData server adjusts the priority of the underlying bearer for both participants of the MCData one-to-one FD communication. The priority is retained until the communication ends.

7. The MCData server sends MCData one-to-one FD upgrade response to MCData client 1.

8. MCData client 1 and MCData client 2 continue with the MCData one-to-one FD communication, which has been transformed into an MCData emergency one-to-one FD communication.

7.5.2.12 Group FD communication upgrade to an emergency group FD communication

7.5.2.12.1 General

This clause is for adding procedures related to upgrading an existing MCData group FD communication to an MCData emergency group FD communication.

7.5.2.12.2 Procedure

The procedure in figure 7.5.2.12.2-1 describes the case where an authorized MCData user is upgrading an onging MCData group FD communication to an MCData emergency group FD communication. This procedure is applicable only when group MCData FD communication is established as described in subclause 7.5.2.7 "Group standalone file distribution using media plane".

NOTE 1: For simplicity, a single MCData server is shown in place of a user home MCData server and a group hosting MCData server.

Pre-conditions:

1. The MCData group is previously defined on the group management server with MCData client 1, MCData client 2 and MCData client 3 are affiliated to that MCData group.

2. All members of the MCData group belong to the same MCData system.

3. An MCData group FD communication is already in progress.

4. The initiating MCData client 1 has been configured to send an MCData emergency alert when upgrading an MCData emergency group communication.

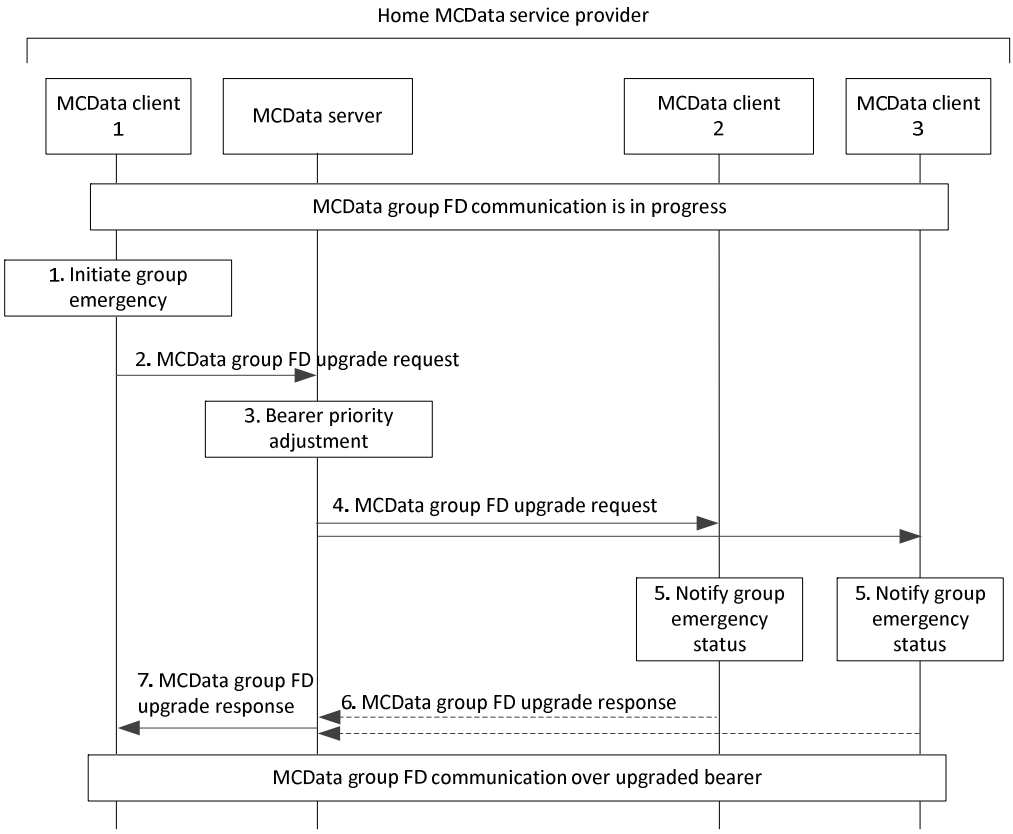

Figure 7.5.2.12.2-1: MCData group FD communication upgraded to an MCData emergency group FD communcation

1. The MCData user at MCData client 1 initiates a group emergency. MCData client 1 sets its MCData emergency state. The MCData emergency state of MCData client 1 is retained until explicitly cancelled by the user of MCData client 1.

NOTE 2: While MCData client 1 is in the emergency state, all types of MCData one-to-one and group communications initiated by MCData client 1 are initiated as MCData emergency communications.

2. MCData client 1 requests the MCData server to upgrade the MCData group to an in-progress emergency state by sending a MCData group FD upgrade request. The MCData client 1 sets the emergency indicator in the request. If configured to send an MCData alert when initiating an MCData emergency upgrade, the request also contains an indication that an MCData alert is to be initiated.

3. The MCData server sets the emergency state of the MCData group and adjusts the priority of the underlying bearer for all or selected participants in the MCData group FD communication that receive the communication over unicast.

NOTE 3: The determination of the selected participants whose bearers have to be upgraded is left to implementation.

NOTE 4: While the MCData group is in the in-progress emergency state, all types of MCData communications within the group are processed as emergency group communications by the MCData server. MCData group members that are not in the emergency state do not indicate emergency in group communication requests.

4. MCData server sends the MCData group FD upgrade request towards the MCData clients of each of those affiliated MCData group members. The request contains an indication of an MCData emergency alert if the request from the originator indicated MCData emergency alert.

5. MCData users are notified of the in-progress emergency state of the MCData group.

6. The receiving MCData clients send the MCData group FD upgrade response to the MCData server to acknowledge the MCData group emergency request. For a multicast call, these acknowledgements are not sent.

7. The MCData server sends the MCData group FD upgrade response to the MCData user 1 to confirm the upgrade request.

NOTE 5: Step 7 can occur at any time following step 3, depending on the conditions to proceed with the call.

MCData client 1, MCData client 2 and MCData client 3 continue with the MCData group FD communication, which has been transformed into an MCData emergency group FD communication.

7.5.2.13 Group FD communication in-progress emergency group state cancel

7.5.2.13.1 General

This clause describes procedures related to an MCData in-progress emergency group state cancel. The emergency state of the group can also be cancelled by the group SDS in-progress emergency state cancellation procedure in subclause 7.4.2.10.2, or by the emergency alert cancellation procedure specified in 3GPP TS 23.280 [16], subclause 10.10.1.2.2.2.

7.5.2.13.2 Procedure

The procedure in figure 7.5.2.13.2-1 describes the case where an authorized MCData user cancels MCData group's in-progress emergency.

Pre-conditions:

1. The MCData group is previously defined on the group management server with MCData client 1, MCData client 2 and MCData client 3 affiliated to that MCData group.

2. All members of the MCData group belong to the same MCData system.

3. MCData group members have been notified about the in-progress emergency.

4. The MCData group is in the in-progress emergency state and has prioritized bearer support.

5. MCData client 1 previously initiated the in-progress emergency for the group.

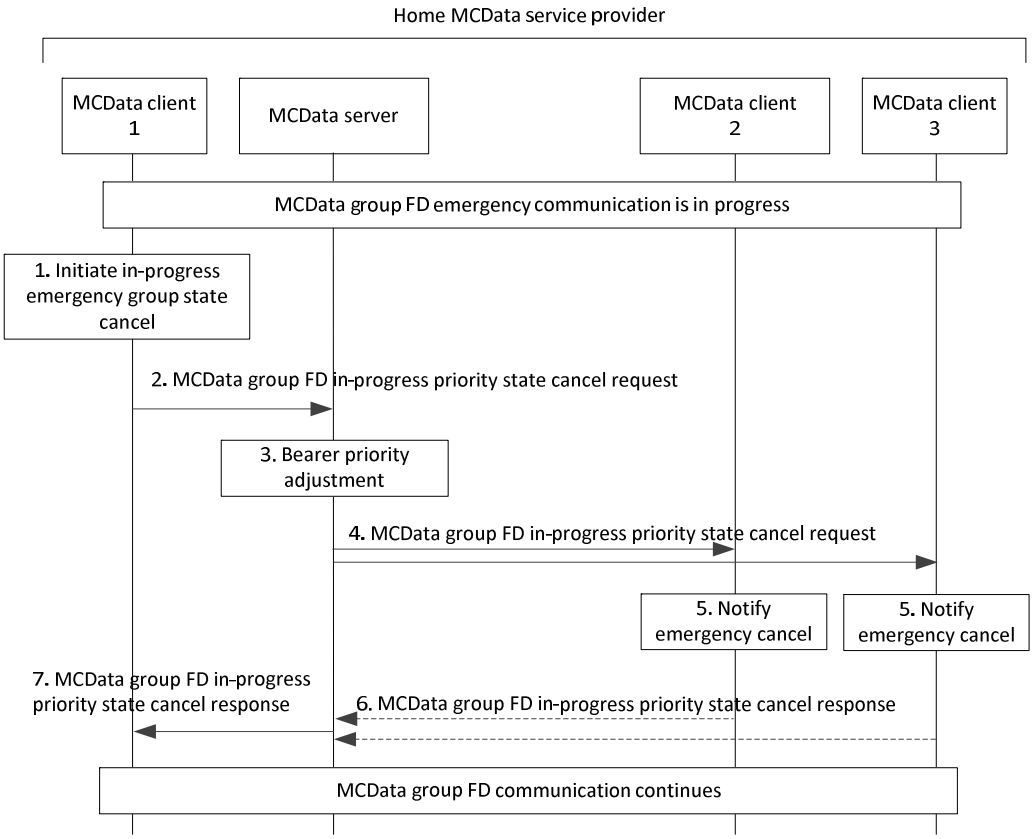

Figure 7.5.2.13.2-1: MCData group FD in-progress emergency group state cancel

1. The user at the MCData client 1 initiates an MCData group FD in-progress emergency group state cancel.

NOTE 1: An MCData user authorized to cancel in-progress emergencies on the MCData group can also be authorised to cancel the MCData emergency alert in addition to the initiator. However, only the initiator can cancel the initiator's local MCData emergency state.

2. The MCData client 1 sends an MCData group FD in-progress priority state cancel request to the MCData server. The MCData client 1 also resets emergency indicator in the request to inform MCData server about cancellation of in-progress emergency group state.

NOTE 2: If an MCData emergency alert relating to MCData client 1 is in effect together with an MCData in-progress emergency group state on the MCData group, the MCData emergency alert of MCData client 1 can be cancelled at the same time. In that case, the MCData group FD in-progress priority group state cancel request carries an indication that the emergency alert of MCData client 1 is also being cancelled.

NOTE 3: If an MCData group FD in-progress priority state cancel request is received by the MCData server while a group member that is in the emergency state is transmitting, the MCData group FD in-progress priority state cancel request is rejected by the MCData server.

3. The MCData server adjusts the priority of the underlying bearer; priority treatment is no longer required. The MCData server cancels/resets the emergency in-progress state of the MCData group.

4. The MCData server sends an MCData group FD in-progress priority state cancel request to the MCData group members.

5. MCData group members are notified of the MCData group FD in-progress emergency state cancel.

6. The receiving MCData clients send the MCData group FD in-progress priority state cancel response to the MCData server to acknowledge the MCData in-progress emergency group state cancel. For a multicast call scenario, these acknowledgements are not sent.

7. The MCData server sends the MCData group FD in-progress priority state cancel response to the MCData user 1 to confirm the MCData in-progress emergency group state cancel. If the MCData in-progress emergency group state cancel request (in step 2) contained the "Alert indicator" IE, the MCData client 1 resets its local emergency status.

NOTE 4: Step 7 can occur at any time following step 3, depending on the conditions to proceed with the call.

7.5.2.14 Group FD communication upgrade to an imminent peril group FD communication

7.5.2.14.1 General

This clause is for adding procedures related to an imminent peril group FD communication.

7.5.2.14.2 Procedure

This procedure is applicable only when group MCData communication is established as described in subclause 7.5.2.7 "Group standalone file distribution using media plane". The MCData service shall support the procedures and related information flows as specified in subclause 7.5.2.12 "Group FD communication upgrade to an emergency group FD communication" with the following clarifications:

- In step 2), the MCData client 1 sets the imminent peril indicator;
- In step 3), the bearers' priority is adjusted as necessary, to correspond to an imminent peril priority which could be different than the setting used in the procedure in subclause 7.5.2.12; and
- In step 5), MCData users are notified of the in-progress imminent peril state of the MCData group.

7.5.2.15 Group FD communication in-progress imminent peril group state cancel

7.5.2.15.1 General

This clause is for adding procedures related to an imminent peril group state cancel.

7.5.2.15.2 Procedure

The MCData service shall support the procedures and related information flows as specified in subclause 7.5.2.13 "Group FD communication in-progress emergency group state cancel" with the following clarifications:

- In step 2), the MCData client 1 sets the imminent peril indicator; and
- In step 5), MCData users are notified of the in-progress imminent peril state cancel.

7.5.3 File distribution for off-network

7.5.3.1 General

Off-network file distribution communications are based on ProSe capabilities as described in clause 7.16.

7.5.3.2 Information flows for file distribution

7.5.3.2.1 MCData FD request (using media plane)

Table 7.5.3.2.1-1 describes the information flow for the MCData FD request sent from the MCData client to another MCData client.

Table 7.5.3.2.1-1: MCData FD request (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
MCData ID	M	The identity of the MCData user receiving the file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download. (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE)	M	Media parameters offered
NOTE: Includes file metadata.		

7.5.3.2.2 MCData FD response (using media plane)

Table 7.5.3.2.2-1 describes the information flow for the MCData FD response sent from the MCData client to another MCData client.

Table 7.5.3.2.2-1: MCData FD response (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected
Acceptance confirmation	M	An indication whether the client has positively accepted the request

7.5.3.2.3 MCData download completed report

Table 7.5.3.2.3-1 describes the information flow for the MCData download completed report sent from the MCData client to another MCData client.

Table 7.5.3.2.3-1: MCData download completed report

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Disposition association	M	Identifies the original MCData transaction
Disposition confirmation	M	An indication that the client has completed downloading file

7.5.3.2.4 MCData group standalone FD request (using media plane)

Table 7.5.3.2.4-1 describes the information flow for the MCData group standalone FD request sent from the MCData client to another MCData client.

Table 7.5.3.2.4-1: MCData group standalone FD request (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending the file
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed report is expected or not
Download indication	O	Indicates mandatory download. (i.e. auto accept this media plane setup request)
Application metadata container	O	Implementation specific information that is communicated to the recipient
SDP offer (see NOTE)	M	Media parameters offered
NOTE: Includes file metadata.		

7.5.3.2.5 MCData group standalone FD response (using media plane)

Table 7.5.3.2.5-1 describes the information flow for the MCData group standalone FD response sent from the MCData client to another MCData client.

Table 7.5.3.2.5-1: MCData group standalone FD response (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData group ID	M	The MCData group ID to which the file is to be sent
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected
Acceptance confirmation	M	An indication whether the client has positively accepted the request

7.5.3.3 One-to-one standalone file distribution using media plane

7.5.3.3.1 General

The MCData client uses media plane for a standalone FD download from another MCData client in off-network.

7.5.3.3.2 Procedure

Figure 7.5.3.3.2-1 describes procedures for an off-network MCData client 1 initiating one-to-one MCData data communication for sending standalone FD data to other MCData client, with or without download completed report request.

Pre-conditions:

1. MCData user 1 has initiated communication for sending standalone FD data to other MCData user 2.
2. MCData client 1 and MCData client 2 are members of the same ProSe Discovery group and are ProSe 1:1 direct communication capable.
3. MCData client 1 has discovered MCData client 2 in proximity, associated with MCData user 2, using ProSe Discovery procedures.

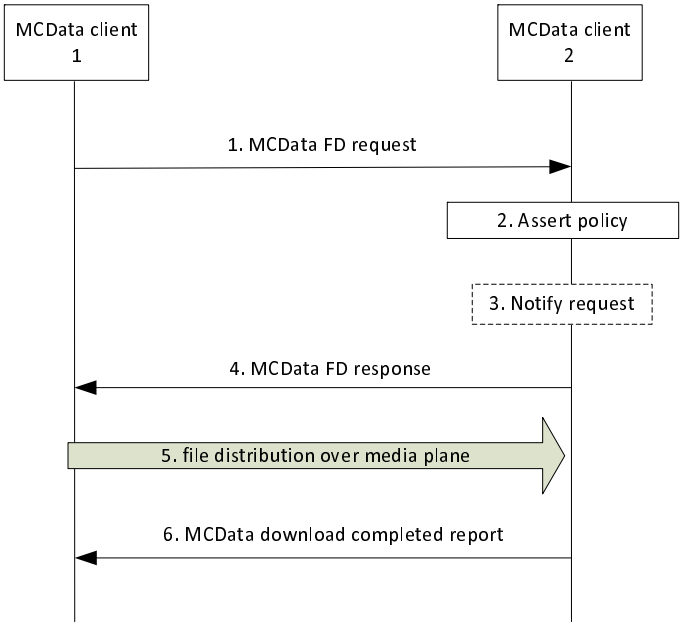

Figure 7.5.3.3.2-1: One-to-one standalone file distribution using media plane

1. MCData client 1 sends a MCData FD request towards the MCData client 2. File metadata information is included in the SDP. The MCData FD request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData FD request contains conversation identifier for message thread indication. The MCData FD request may include additional implementation specific information in the application metadata container. MCData FD request may contain mandatory download indication. The MCData FD request may contain download completed report indication if selected by the user at MCData client 1.

2. On receiving a MCData FD request, the MCData client 2 checks whether any policy is to be asserted to limit certain types of message or content to certain members, for example, due to location or user privilege.

3. The receiving MCData client 2 notifies the user about the incoming MCData FD request which may be either accepted or rejected or ignored. MCData user may not be sought consent if the request includes mandatory download indication in the MCData FD request and instead only notify the MCData user about file downloading.

4. If the target MCData user 2 provides a response (accept or reject) to the notification, then the MCData client 2 sends the MCData FD response to the MCData client 1. MCData client 2 automatically sends accepted MCData FD response when the incoming request included mandatory download indication.

5. MCData client 1 distributes the file over the established media plane to MCData client 2.

6. The MCData client 2 records file download completed and notifies MCData user 2. MCData client 2 initiates a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

7.5.3.4 Group standalone file distribution using media plane

7.5.3.4.1 General

The initiation of a group standalone FD to a selected group results in off-network MCData group members receiving the file data.

7.5.3.4.2 Procedure

Figure 7.5.3.4.2-1 describes procedures for an off-network MCData client 1 initiating group MCData data communication for sending FD data to a MCData group, with or without download completed report request.

Pre-conditions:

1. MCData user 1 has initiated group communication for sending FD data to the MCData group.

2. Information for ProSe direct communications corresponding to the MCData group and its mapping to ProSe Layer-2 Group ID are pre-configured in MCData client 1.

3. MCData client 1 to MCData client N are members of the same MCData group.

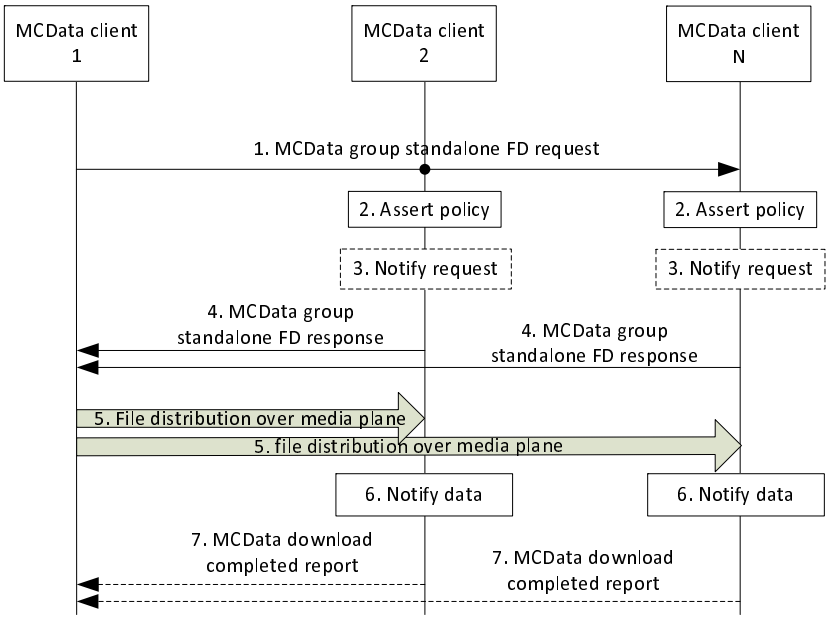

Figure 7.5.3.4.2-1: Group standalone file distribution using media plane

1. MCData client 1 sends a MCData FD request towards the MCData group. File metadata information is included in the SDP. The MCData group standalone data request contains MCData group ID as selected by the user at MCData client 1. The MCData group standalone FD request contains conversation identifier for message thread indication. The MCData group standalone FD request may include additional implementation specific information in the application metadata container. MCData group standalone FD request may contain mandatory download indication. The MCData group standalone FD request may contain download completed report indication if selected by the user at MCData client 1.

2. On receiving a MCData FD request, the MCData clients check whether any policy is to be asserted to limit certain types of message or content to certain members, for example, due to location or user privilege.

3. If the policy assertion is positive, the receiving MCData clients 2 to n notifies the user about the incoming MCData group standalone FD request which may be either accepted or rejected or ignored. MCData user may not be sought consent if the request includes mandatory download indication in the MCData group standalone FD request and instead only notify the MCData user about file downloading.

4. If the target MCData user on MCData clients 2 to n provides a response (accept or reject) to the notification, then the respective MCData client sends the MCData group standalone FD response to the MCData client 1. MCData client 2 to n automatically sends accepted MCData group standalone FD response when the incoming request included mandatory download indication.

5. MCData client 1 and MCData client 2 to n have successfully established media plane for file transmission and the MCData client 1 transmits the file data.

6. The MCData client 2 to n successfully receiving the file, records file download completed and notifies MCData users.

7. MCData client 2 to n initiate a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

7.6 Transmission and reception control

7.6.1 General

Based on the configurations (available in MCData user profile, group configuration and service configuration), the MCData transmission and reception control provides a necessary capability for an authorized user of the MCData service to transmit, receive notification messages due to various trigger conditions, advocates reception mode and terminate transmission when there is no longer a need to transmit. The subclauses below describe the transmission and reception control procedures using signalling control plane.

7.6.2 Transmission and reception control for on-network

7.6.2.1 Information flows for transmission and reception control

7.6.2.1.1 MCData control indication

Table 7.6.2.1.1-1 describes the information flow for the MCData control indication sent from the MCData server to the MCData client.

Table 7.6.2.1.1-1: MCData control indication

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the control indication is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Control indication type	M	One of the following: - No permission to transmit data - No affiliated members found to the selected MCData group - Rejected due to exceeding data transmit size - Rejected due to exceeding data transmit time - Request to transmit is queued

7.6.2.1.2 MCData indication

Table 7.6.2.1.2-1 describes the information flow for the MCData indication sent from the MCData server to the MCData client.

Table 7.6.2.1.2-1: MCData indication

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the MCData indication is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Deferred data list	M	List of references to deferred data awaiting download

7.6.2.1.3 MCData get deferred list request

Table 7.6.2.1.3-1 describes the information flow for the MCData get deferred list request sent from the MCData client to the MCData server.

Table 7.6.2.1.3-1: MCData get deferred list request

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting deferred list

7.6.2.1.4 MCData get deferred list response

Table 7.6.2.1.4-1 describes the information flow for the MCData get deferred list response sent from the MCData server to the MCData client.

Table 7.6.2.1.4-1: MCData get deferred list response

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting deferred list
Deferred data list	M	List of references to deferred data awaiting download

7.6.2.2 Automatic transmission for SDS

7.6.2.2.1 General

When SDS message is sent, the data is transferred from the sending MCData client to the receiving MCData client without any request/grant procedure or any explicit actions on the part of the receiving MCData client.

7.6.2.2.2 Procedure

The procedure in figure 7.6.2.2.2-1 describes the case where MCData SDS is automatically transmitted to the selected recipient user or affiliated members of the selected MCData group.

Pre-conditions:

1. MCData user is configured with permission to transmit data.
2. Optionally, MCData client may have an activated functional alias to be used.
3. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

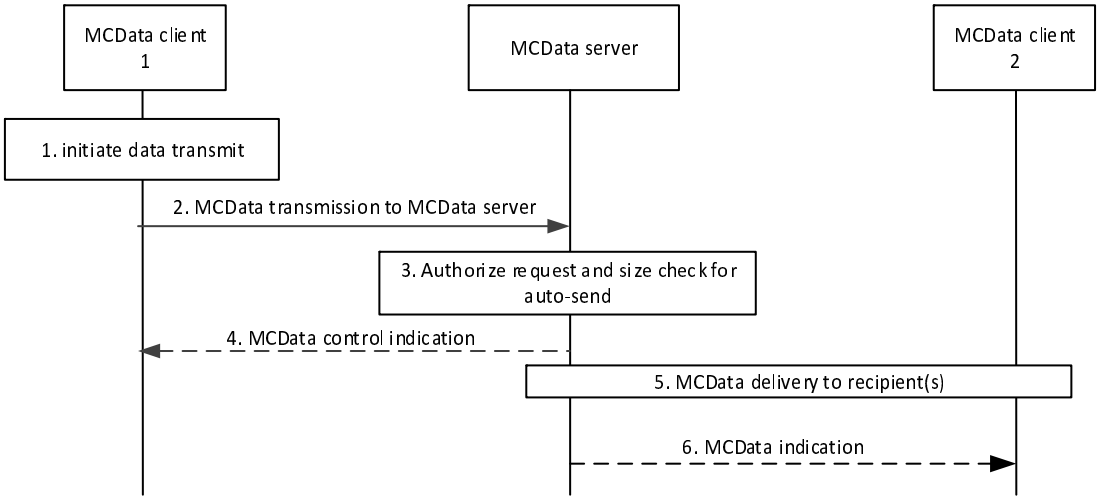

Figure 7.6.2.2.2-1: Automatic transmission for SDS

1. MCData user selects the data to transmit and the recipient MCData user or MCData group. The MCData user at MCData client 1 may include a functional alias used within the SDS data transmission.
2. MCData client checks for MCData user's permission to transmit data and checks if the data size is less than the maximum data size for SDS. MCData client calculates the total transmission request size and determines to select one of the appropriate procedures described in subclause 7.4.2.2, 7.4.2.3, 7.4.2.5 or 7.4.2.6.
3. Transmission control on the MCData server verifies if the MCData user is authorized to transmit and the data size in the received transmission request does not exceed the maximum data size for SDS. MCData server

verifies whether the provided functional alias, if present, can be used and has been activated for the MCData user.

4. MCData server may send one of the following MCData control indications:

   a) If the MCData user does not have permission to transmit data to another MCData user or MCData group then the "No permission to transmit data" control indication is sent.

   b) If the selected transmission is for a MCData group and there are no affiliated group members, then the transmission control on MCData server sends the "No affiliated members found to the selected MCData group" control indication.

   c) MCData server may queue the data transmit request for later transmission with control indication "Request to transmit is queued".

   Otherwise continue with step 5.

5. MCData server automatically transmits the data and, if available, the functional alias of the originating MCData client 1 to the selected MCData user or the affiliated members or all group members (in the case of lossless communication) of the selected MCData group according to the procedures selected in step 2.

6. The MCData server may store the data in temporary storage (e.g. if the recipient is not available at the time of data delivery or network congestion or data deferred by the user) and may send MCData indication to notify the recipient of available data for retrieval:

   a) If the timer expired for periodic announcement with the list of available recently invited data communications, the recipient MCData client waiting to receive the temporarily stored data receives MCData indication with the list of available temporarily stored data waiting to download in the Deferred data list .

   b) If the temporarily stored data is expired, the data may be purged from the temporary store and the recipient MCData user may be informed in MCData indication with "Data expired and not available to download anymore" in the Deferred data list.

7.6.2.3 Send data with mandatory download

7.6.2.3.1 General

The mandatory download procedure allows a sending MCData client to send data to a receiving MCData client, where the receiving MCData client is compelled to download the data.

7.6.2.3.2 Procedure

The procedure in figure 7.6.2.3.2-1 describes the case where MCData user is using FD. The FD is subjected to transmission control prior to transmitting data to the selected recipient user or affiliated members of the selected MCData group for mandatory download.

Pre-conditions:

1. MCData user is configured with permission to transmit data.
2. MCData administrator has configured maximum data size for FD.
3. Maximum amount of data that a MCData user can transmit in a single request is configured.
4. Maximum amount of time that a MCData user can transmit in a single request is configured.
5. Optionally, MCData client may have an activated functional alias to be used.
6. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

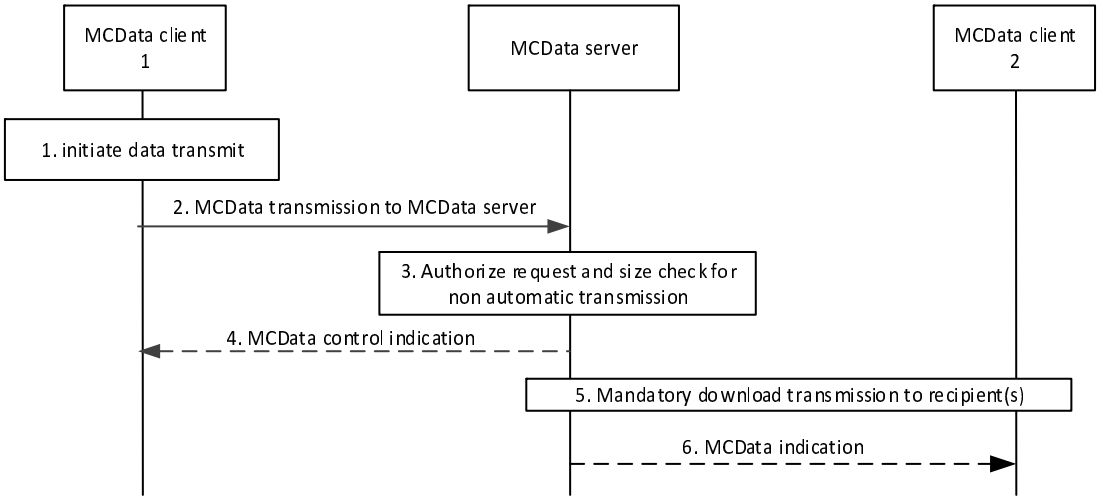

Figure 7.6.2.3.2-1: Send data with mandatory download

1. MCData user selects the data to transmit, the recipient MCData user or MCData group and the indication for mandatory download. The MCData user at MCData client 1 may include a functional alias used within the FD data transfer.

2. MCData client has checked for MCData user's permission to transmit data. MCData client calculates the total transmission request size and determines to select one of the appropriate procedures described in subclause 7.5.2.4, 7.5.2.5, 7.5.2.6 or 7.5.2.7 and including the mandatory download indication.

3. Transmission control on the MCData server verifies if the MCData user is authorized to transmit, the data size in the received transmission request is within the maximum size allowed for FD transmission and is within the maximum amount of time that a MCData user can transmit in a single request. MCData server verifies whether the provided functional alias, if present, can be used and has been activated for the MCData user.

4. MCData server may send one of the following MCData control indications:

   a) If the MCData user does not have permission to transmit data to another MCData user or MCData group then the "No permission to transmit data" control indication is sent.

   b) If the data size requested to be transmitted is more than the maximum amount of data that an MCData user can transmit in a single request, the transmission control on MCData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit size".

   c) If the data transmission time exceeds the maximum amount of time that an MCData user can transmit in a single request, the transmission control on MCData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".

   d) If the selected transmission is for a MCData group and there are no affiliated group members, then the transmission control on MCData server sends the "No affiliated members found to the selected MCData group" control indication.

   e) MCData server may queue the data transmit request for later transmission with control indication "Request to transmit is queued".

   Otherwise continue with step 5.

5. MCData server transmits the data and, if available, the functional alias of the originating MCData client 1 to the selected MCData user or the affiliated members or all group members (in the case of lossless communication) of the selected MCData group according to the procedures selected in step 2 (where the recipient MCData client receives the data automatically).

6. The MCData server may store the data in temporary storage (e.g. if the recipient is not available at the time of data delivery or network congestion or data deferred by the user) and may send MCData indication to notify the recipient of available data for retrieval:

a) If the timer expired for periodic announcement with the list of available recently invited data communications, the recipient MCData client waiting to receive the temporarily stored data receives MCData indication with the list of available temporarily stored data waiting to download in the Deferred data list .

b) If the temporarily stored data is expired, the data may be purged from the temporary store and the recipient MCData user may be informed in MCData indication with "Data expired and not available to download anymore" in the Deferred data list.

7.6.2.4 Send data without mandatory download

7.6.2.4.1 General

The send data without mandatory download procedure allows the receiving MCData client to accept download, defer download (i.e. no response) or refuse (e.g. by the user deleting the notification item) the data sent from the sending MCData client.

7.6.2.4.2 Procedure

The procedure in figure 7.6.2.4.2-1 describes the case where MCData user selected data is subjected to transmission control prior to transmitting data to the selected recipient user or affiliated members of the selected MCData group for downloading with recipient MCData user consent.

Pre-conditions:

1. MCData user is configured with permission to transmit data.
2. Maximum amount of data or time that an MCData user can transmit in a single request is configured.
3. Time limit for the temporarily stored data waiting to be delivered to a receiving user is configured.
4. Optionally, MCData client may have an activated functional alias to be used.
5. The MCData server may have subscribed to the MCData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

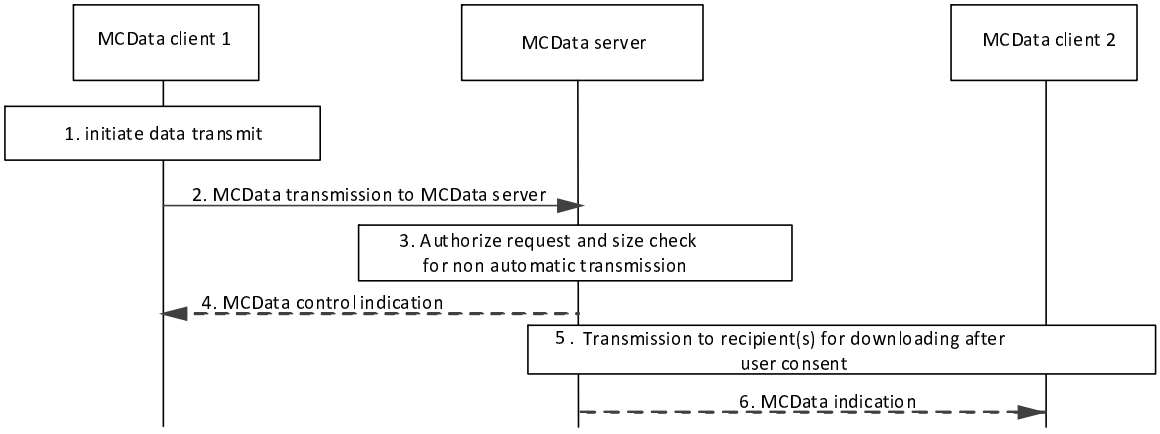

Figure 7.6.2.4.2-1: Send data without mandatory download

1. MCData user selects the data to transmit and the recipient MCData user or MCData group and does not select the mandatory download indication. The MCData user at MCData client 1 may include a functional alias used within the data transmission.
2. MCData client has checked for MCData user's permission to transmit data and the data size is within the maximum data size allowed. The MCData client calculates the total transmission request size and determines to select procedure described in subclause 7.5.2.4, 7.5.2.5, 7.5.2.6 or 7.5.2.7 and without including the mandatory download indication.

3. Transmission control on the MCData server verifies if the MCData user is authorized to transmit, the data size in the received transmission request is within the maximum data size allowed and is within the maximum amount of time that a MCData user can transmit in a single request. MCData server verifies whether the provided functional alias, if present, can be used and has been activated for the MCData user.

4. MCData server may send one of the following control indications:

   a) If the MCData user does not have permission to transmit data to another MCData user or MCData group then the "No permission to transmit data" control indication is sent.

   b) If the selected transmission is for a MCData group and there are no affiliated group members, then the transmission control on MCData server sends the "No affiliated members found to the selected MCData group" control indication.

   c) If the data size requested to be transmitted is more than the maximum amount of data that an MCData user can transmit in a single request, the transmission control on MCData server rejects the data transmission requests and sends the rejection control indication "Rejected due to exceeding data transmit size".

   d) If the data transmission time exceeds the maximum amount of time that an MCData user can transmit in a single request (applies to DS only), the transmission control on MCData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".

   e) MCData server may queue the data transmit request for later transmission with a control indication "Request to transmit is queued".

   Otherwise, continue with step 5.

5. MCData server transmits the data and, if available, the functional alias of the originating MCData client 1 to the selected MCData user or the affiliated members or all group members (in the case of lossless communication) of the selected MCData group according to the procedures selected in step 2 (where the recipient MCData client may receive the data automatically).

6. The MCData server may store the data in temporary storage (e.g. if the recipient is not available at the time of data delivery or network congestion or data deferred by the user) and may send MCData indication to notify the recipient of available data for retrieval:

   a) If the timer expired for periodic announcement with the list of available recently invited data communications, the recipient MCData client waiting to receive the temporarily stored data receives MCData indication with the list of available temporarily stored data waiting to download in the Deferred data list .

   b) If the temporarily stored data is expired, the data may be purged from the temporary store and the recipient MCData user may be informed in MCData indication with "Data expired and not available to download anymore" in the Deferred data list.

7.6.2.5 Accessing list of deferred data group communications

7.6.2.5.1 General

This procedure allows an MCData client to obtain a list of deferred data communications.

7.6.2.5.2 Procedure

The procedure in figure 7.6.2.5.2-1 describes the case where the recipient MCData client receives the list of available temporarily stored data waiting to download for the deferred data group communications.

Pre-conditions:

1. MCData server has temporarily stored data for the deferred data group communications e.g. due to recipient MCData client deferred to download.

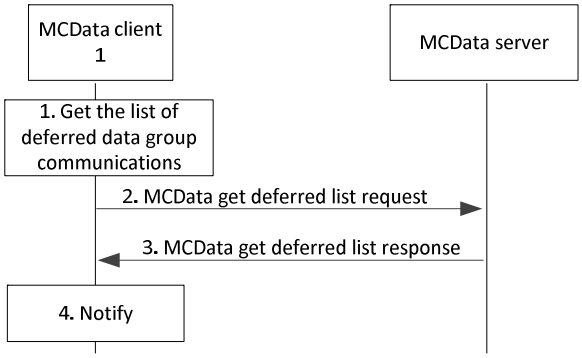

Figure 7.6.2.5.2-1: Accessing list of deferred data group communications

1. MCData user initiates the request to get the list of temporarily stored data for the deferred data group communications on the MCData server e.g. due to recipient MCData client deferred to download.
2. MCData client sends a MCData get deferred list request to the MCData server.
3. MCData server generates the list of temporarily stored data for the affiliated group(s), available to download for the requesting MCData client and sends the list in the MCData get deferred list response.
4. MCData client notifies the list of temporarily stored data for the deferred data group communications, upon which the MCData user may decide to retrieve the corresponding data.

7.7 Communication release

7.7.1 General

The subclauses below describe the MCData communication release procedures, which may be initiated either by the sender or the MCData server or the authorized MCData user.

7.7.2 Communication release for on-network

7.7.2.1 Information flows for communication release

7.7.2.1.1 MCData communication release request (one-to-one communication using media plane)

Table 7.7.2.1.1-1 describes the information flow for the MCData communication release request (in subclause 7.7.2.2.2.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.7.2.1.1-1: MCData communication release request (one-to-one communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading data
MCData ID	M	MCData ID on which the communication is to be released

7.7.2.1.2 MCData communication release response (one-to-one communication using media plane)

Table 7.7.2.1.2-1 describes the information flow for the MCData communication release response (in subclause 7.7.2.2.2.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.7.2.1.2-1: MCData communication release response (one-to-one communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to upload data
MCData ID	M	MCData ID on which the communication is released
Release confirmation	M	Communication released or not indication

7.7.2.1.3 MCData communication release request (group communication using media plane)

Table 7.7.2.1.3-1 describes the information flow for the MCData communication release request (in subclause 7.7.2.2.2.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.7.2.1.3-1: MCData communication release request (group communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading data
MCData group ID	M	MCData group ID on which the communication is to be released

7.7.2.1.4 MCData communication release response (group communication using media plane)

Table 7.7.2.1.4-1 describes the information flow for the MCData communication release response (in subclause 7.7.2.2.2.2) sent from the MCData client to the MCData server and from the MCData server to another MCData client.

Table 7.7.2.1.4-1: MCData communication release response (group communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to upload data
MCData group ID	M	MCData group ID on which the communication is released
Release confirmation	M	Communication released or not indication

7.7.2.1.5 Void

7.7.2.1.6 Void

7.7.2.1.7 Void

7.7.2.1.8 MCData server communication release request (one-to-one communication using media plane)

Table 7.7.2.1.8-1 describes the information flow for MCData server communication release request (in subclause 7.7.2.3.2.2) sent from the MCData server to the MCData clients involved in one-to-one communication.

Table 7.7.2.1.8-1: MCData server communication release request (one-to-one communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user to which communication is released
Conversation Identifier	M	Identifies the conversation
Release Reason	M	Indicates reason for the release

7.7.2.1.9 MCData server communication release response (one-to-one communication using media plane)

Table 7.7.2.1.9-1 describes the information flow for the MCData server communication release response (in subclause 7.7.2.3.2.2) sent from the MCData client to the MCData server.

Table 7.7.2.1.9-1: MCData server communication release response (one-to-one communication using media plane)

Information element	Status	Description
MCData ID	M	MCData ID to which the communication is released
Conversation Identifier	M	Identifies the conversation
Release confirmation	M	Communication released or not indication

7.7.2.1.10 MCData server communication release request (group communication using media plane)

Table 7.7.2.1.10-1 describes the information flow for MCData server communication release request (in subclause 7.7.2.3.2.2) sent from the MCData server to the MCData clients involved in group communication.

Table 7.7.2.1.10-1: MCData server communication release request (group communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user to which communication is released
MCData group ID	M	MCData group ID on which the communication is released
Conversation Identifier	M	Identifies the conversation
Release Reason	M	Indicates reason for the release

7.7.2.1.11 MCData server communication release response (group communication using media plane)

Table 7.7.2.1.11-1 describes the information flow for the MCData server communication release response (in subclause 7.7.2.3.2.2) sent from the MCData client to the MCData server.

Table 7.7.2.1.11-1: MCData server communication release response (group communication using media plane)

Information element	Status	Description
MCData ID	M	MCData ID to which the communication is released
MCData group ID	M	MCData group ID on which the communication is released
Conversation Identifier	M	Identifies the conversation
Release confirmation	M	Communication released or not indication

7.7.2.1.12 Void

7.7.2.1.13 MCData release intent request (one-to-one communication using media plane)

Table 7.7.2.1.13-1 describes the information flow for MCData release intent request (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCData server to the MCData client.

Table 7.7.2.1.13-1: MCData release intent request (one-to-one communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user who is originator of the one-to-one communication
Conversation Identifier	M	Identifies the conversation
Request for more info	O	Indicates what MCData server needs more information (e.g. to know the remaining data volume to transmit) about the communication which has been identified to be released

7.7.2.1.14 MCData more information response (one-to-one communication using media plane)

Table 7.7.2.1.14-1 describes the information flow for MCData more information response (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCData client to the MCData server and from MCData server to authorized MCData user.

Table 7.7.2.1.14-1: MCData more information response (one-to-one communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user who is originator of the one-to-one communication
Conversation Identifier	M	Identifies the conversation
More info	M	Information as requested by MCData server

7.7.2.1.15 MCData release intent request (group communication using media plane)

Table 7.7.2.1.15-1 describes the information flow for MCData release intent request (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCData server to the MCData client.

Table 7.7.2.1.15-1: MCData release intent request (group communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user who is the originator of the group communication
Conversation Identifier	M	Identifies the conversation
MCData group ID	M	MCData group ID on which the communication is released
Request for more info	O	Indicates what MCData server needs more information about the communication which has been identified to be released

7.7.2.1.16 MCData more information response (group communication using media plane)

Table 7.7.2.1.16-1 describes the information flow for MCData more information response (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCData client to the MCData server and from MCData server to authorized MCData user.

Table 7.7.2.1.16-1: MCData more information response (group communication using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user who is originator of the group communication
Conversation Identifier	M	Identifies the conversation
MCData group ID	M	MCData group ID on which the communication is released
More info	M	Information as requested by MCData server

7.7.2.1.17 MCData auth user communication release request (one-to-one communication using media plane)

Table 7.7.2.1.17-1 describes the information flow for MCData auth user communication release request (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the authorized MCData user to the MCData server.

Table 7.7.2.1.17-1: MCData auth user communication release request (one-to-one communication using media plane)

Information element	Status	Description
Conversation Identifier	M	Identifies the conversation
Request for more info	O	Indicates what MCData server needs more information about the communication which has been identified to be released
Release Reason	M	Indicates reason for the release

7.7.2.1.18 MCData auth user communication release response (one-to-one communication using media plane)

Table 7.7.2.1.18-1 describes the information flow for the MCData server communication release response (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the MCData server to the authorized MCData user.

Table 7.7.2.1.18-1: MCData auth user communication release response (one-to-one communication using media plane)

Information element	Status	Description
Conversation Identifier	M	Identifies the conversation
Release confirmation	M	Communication released or not indication

7.7.2.1.19 MCData auth user communication release request (group communication using media plane)

Table 7.7.2.1.19-1 describes the information flow for MCData auth user communication release request (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the authorized MCData user to the MCData server.

Table 7.7.2.1.19-1: MCData auth user communication release request (group communication using media plane)

Information element	Status	Description
Conversation Identifier	M	Identifies the conversation
MCData group ID	M	MCData group ID on which the communication is to be released
Request for more info	O	Indicates what MCData server needs more information about the communication which has been identified to be released
Release Reason	M	Indicates reason for the release

7.7.2.1.20 MCData auth user communication release response (group communication using media plane)

Table 7.7.2.1.20-1 describes the information flow for the MCData server communication release response (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the MCData server to the authorized MCData user.

Table 7.7.2.1.20-1: MCData auth user communication release response (group communication using media plane)

Information element	Status	Description
Conversation Identifier	M	Identifies the conversation
MCData group ID	M	MCData group ID on which the communication is to be released
Release confirmation	M	Communication released or not indication

7.7.2.1.21 MCData request for extension

Table 7.7.2.1.21-1 describes the information flow for the MCData request for extension (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCData client to the MCData server and from MCData server to authorized MCData user.

Table 7.7.2.1.21-1: MCData request for extension

Information element	Status	Description
Conversation Identifier	M	Identifies the conversation

7.7.2.1.22 MCData response for extension

Table 7.7.2.1.22-1 describes the information flow for the MCData response for extension (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the authorized MCData user to the MCData server and MCData client to the MCData server and from MCData server to MCData client.

Table 7.7.2.1.22-1: MCData response for extension

Information element	Status	Description
Conversation Identifier	M	Identifies the conversation
Extension response	M	Indicates whether request for extension has been accepted or not

7.7.2.2 MCData user initiated communication release

7.7.2.2.1 General

During MCData communication, a transmitting participant can at any time indicate to stop transmission to the MCData server.

7.7.2.2.2 Release of MCData communication using media plane

7.7.2.2.2.1 General

The subclause describes the procedure for MCData user initiated MCData communication release where MCData communication is established as SDS using media plane or SDS session or file distribution using media plane.

NOTE: The release of MCData communication over MBMS is out of scope of the current specification.

7.7.2.2.2.2 Procedure

The procedure in figure 7.7.2.2.2.2-1 describes signalling control plane procedure for the case where MCData communication is ongoing and transmitting participant initiates MCData communication release. The procedure is applicable for one-to-one and group MCData communications.

Pre-conditions:

1. MCData users on MCData client 1 and client 2 are already registered for receiving MCData service.
2. MCData communication is established between MCData client 1 and MCData client 2 and MCData client1 is the initiator of the MCData communication.

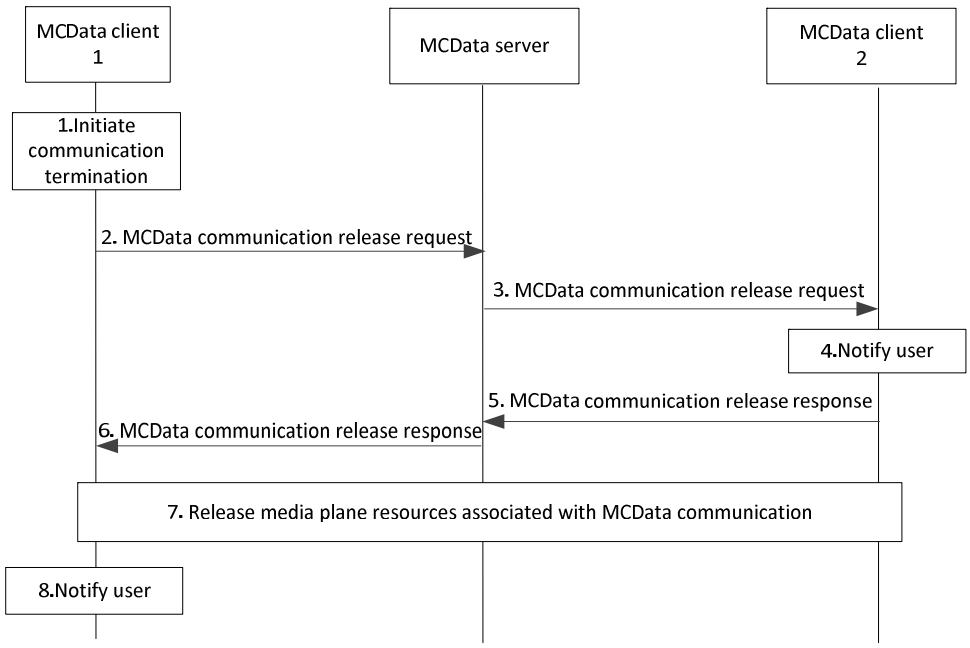

Figure 7.7.2.2.2.2-1: Release of MCData communication using media plane

1. MCData user at MCData client 1 requests to release ongoing MCData communication.
2. MCData client 1 sends MCData communication release request towards MCData server, for tearing down the communication with the other MCData client(s).
3. MCData server sends MCData communication release request to all the participants of the MCData communication.
4. Recipient MCData clients notifies respective MCData user about the release of MCData communication.
5. MCData clients receiving the MCData communication release request provide communication release response back towards MCData server.
6. MCData server sends MCData communication release response back to MCData client 1.
7. All participants of the MCData communication have successfully released the media plane resources associated with the MCData communication that is released.
8. MCData client 1 notifies the MCData user about the communication release.

7.7.2.2.3 Release of MCData communication using HTTP

NOTE: The backward compatibility handling of this procedure is outside the scope of the present document.

7.7.2.3 MCData server initiated communication release without prior indication

7.7.2.3.1 General

MCData server initiates the release of an ongoing MCData communication, since at least one of the communication release conditions are met e.g. lack of bearer capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on the configuration, MCData server either pre-empts the MCData communication without giving prior indication to MCData client or notifies the intent of release to the MCData client initiating communication. Latter scenario allows the MCData user to request for extension of MCData communication and defer the communication release.

7.7.2.3.2 Release of MCData communication using media plane

7.7.2.3.2.1 General

The subclause describes the procedure for MCData server initiated MCData communication release without prior indication, where MCData communication is established as SDS using media plane or file distribution using media plane.

NOTE: The release of MCData communication over MBMS is out of scope of the current specification.

7.7.2.3.2.2 Procedure

The procedure in figure 7.7.2.3.2.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, based on communication release conditions, MCData server initiates the communication release. The procedure is applicable for one-to-one and group communication.

Pre-conditions:

1. MCData users on MCData client 1, client 2 and client 3 are already registered for receiving MCData service.
2. A MCData administrator has configured the limits for the maximum amount of data and time that a participant transmits from a single request to transmit.
3. A MCData communication is ongoing between MCData client 1, client 2 and client 3.

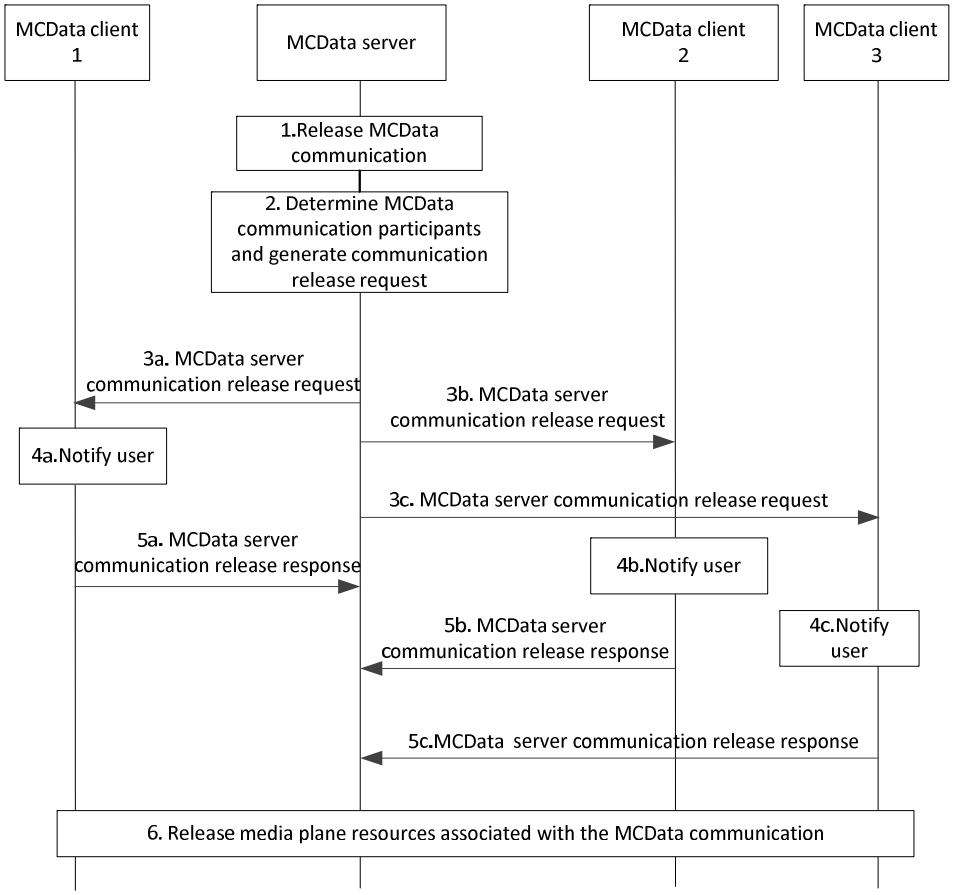

Figure 7.7.2.3.2.2-1: MCData server initiated release of MCData communication using media plane

1. MCData server would like to release the ongoing MCData communication, identified by conversation identifier, since at least one of the release conditions are met e.g. lack of capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on configuration, MCData server decides to pre-empt the MCData communication without giving prior indication to MCData client 1.

2. MCData server identifies the participants of the ongoing MCData communication and generates communication release request to release ongoing MCData communication.

3. MCData server sends server MCData communication release request towards each participant of the MCData communication.

4. MCData users are notified about the release of the MCData communication.

5. MCData client at each MCData communication participant sends server MCData communication release response towards the MCData server.

6. All participants of the MCData communication have successfully released the media plane resources associated with the MCData communication that is released.

7.7.2.3.3 Void

7.7.2.4 MCData server initiated communication release with prior indication

7.7.2.4.1 General

The subclause describes the procedure for MCData server initiated MCData communication release with prior indication, where MCData communication is established as SDS using media plane or file distribution using media plane or file distribution using HTTP.

7.7.2.4.2 Procedure

The procedure in figure 7.7.2.4.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, based on communication release conditions, MCData server initiates communication release. As a result of configuration check, MCData server notifies the intent to release MCData communication, optionally requesting for more information (e.g. to know the remaining data volume to transmit) from the MCData client initiating MCData communication.

Pre-conditions:

1. MCData user on MCData client 1 is already registered for receiving MCData service.
2. MCData administrator has configured the limits for the maximum amount of data and time that a participant transmits from a single request to transmit.
3. MCData communication may be ongoing between MCData participants and MCData client 1 is the initiator of the communication.
4. MCData administrator has configured the time for which MCData server needs to wait for extension request from the MCData user.

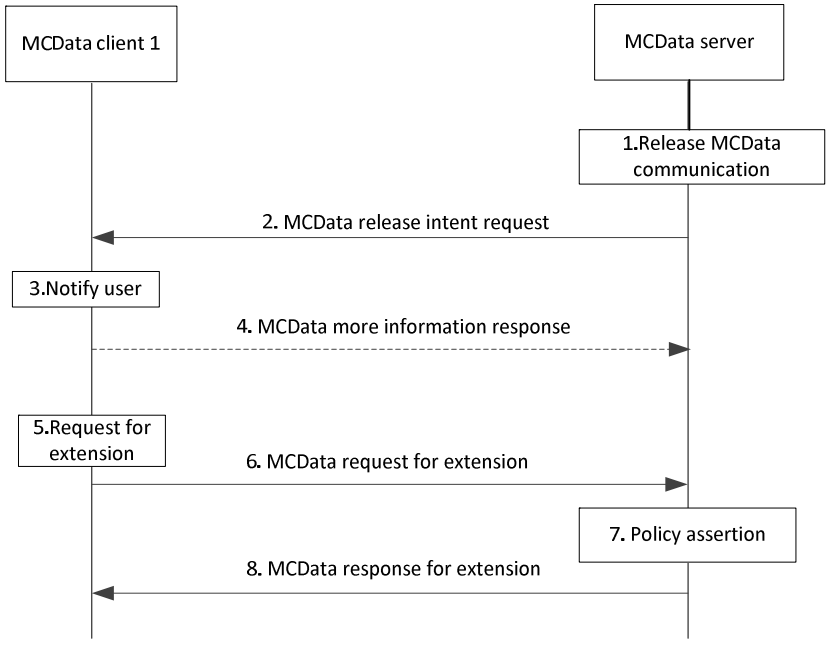

Figure 7.7.2.4.2-1: MCData server initiates communication release with prior indication

1. MCData server releases the ongoing MCData communication, identified by the conversation identifier, since at least one of the release conditions are met e.g. lack of capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on the configuration, MCData server notifies the intent to release MCData communication.

2. MCData server sends the MCData release intent request towards the communication initiating MCData client 1. MCData server may include request for more information (e.g. to know the remaining data volume to transmit).

3. MCData client 1 informs MCData user about the intent to release communication.

4. If request for more information is included in the received MCData release intent request, MCData client 1 sends MCData more information response including the remaining amount of data to transmit. Upon receiving more information response from MCData client 1, MCData server may wait for the request for extension until the time configured by the MCData administrator. If MCData server does not receive MCData request for extension within the configured timeout, the MCData server releases MCData communication as described in subclause 7.7.2.3. Otherwise, continue with remaining steps.

5. MCData user at MCData client 1 requests for extension of the ongoing MCData communication.

6. MCData client 1 sends MCData request for extension of the MCData communication.

7. Upon receiving the MCData request for extension of MCData communication from the MCData client 1, MCData server asserts policies to accept or reject the request for extension.

8. MCData server sends MCData response for extension with success or failure result to MCData client 1. MCData communication will continue if MCData server accepted the request for extension from MCData client 1. Otherwise, MCData communication is released according to procedures described in subclause 7.7.2.3.

7.7.2.5 Authorized MCData user initiated communication release without prior indication

7.7.2.5.1 General

An authorized MCData user at any time during an ongoing MCData communication decides to release communication. The authorized user may decide to release MCData communication without prior indication to the initiator MCData client.

7.7.2.5.2 Procedure

The procedure in figure 7.7.2.5.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, authorized MCData user initiates MCData communication release without prior indication to the initiator MCData client. An authorized MCData user is part of the ongoing MCData communication.

Pre-conditions:

1. An authorized MCData user on MCData client is already registered for receiving MCData service.

2. A MCData communication is ongoing between MCData participants and authorized MCData user is keeping track of which participants are receiving communication e.g. through "message delivered" and/or "message read" indications for the MCData communication.

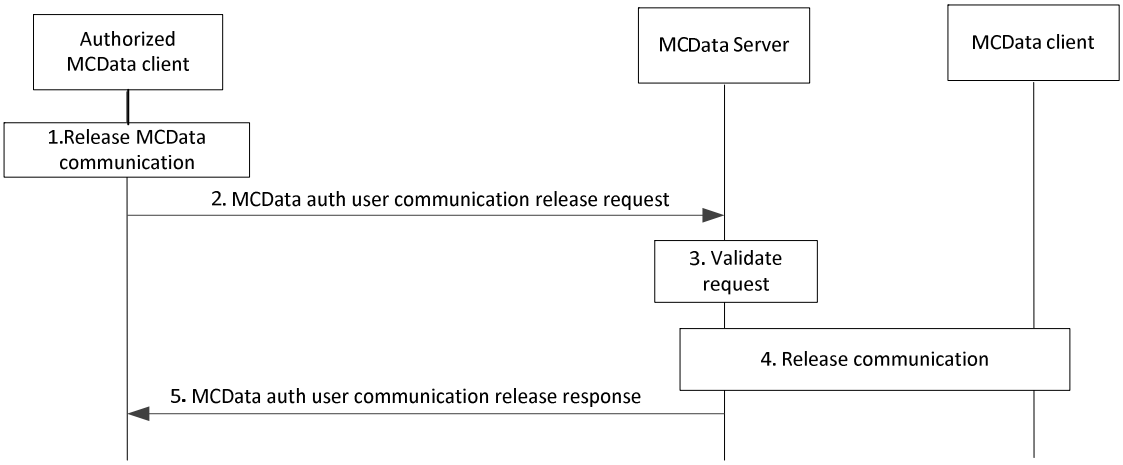

Figure 7.7.2.5.2-1: An authorized MCData user initiates communication release without prior indication

1. An authorized MCData user requests to release the ongoing MCData communication, without providing prior indication to the initiator of the MCData communication, MCData client 1.
2. An authorized MCData client sends MCData auth user communication release request towards MCData server identifying the MCData communication to release. The request also includes indication to the MCData server to release MCData communication without prior indication to the initiator of the MCData communication, MCData client 1.
3. MCData server validates the user from whom the MCData communication release request is received and checks whether the requesting MCData user is authorized to release communication or not.
4. If the user is authorized to release communication, then MCData server releases the ongoing MCData communication according to procedures described in subclause 7.7.2.3.
5. MCData server sends MCData auth user communication release response containing the result of MCData communication release back to authorized MCData client 1.

7.7.2.6 Authorized MCData user initiated communication release with prior indication

7.7.2.6.1 General

An authorized MCData user at any time during an ongoing MCData communication decides to release communication. The authorized user may decide to release MCData communication with prior indication to the initiator MCData client. A prior indication allows initiator MCData client to request for extension for the MCData communication.

7.7.2.6.2 Procedure

The procedure in figure 7.7.2.6.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, authorized MCData user initiates MCData communication release with prior indication to the initiator MCData client. An authorized MCData user is part of the ongoing MCData communication. An initiator MCData user optionally decides to request for the extension of the ongoing communication.

Pre-conditions:

1. An authorized MCData user on MCData client is already registered for receiving MCData service.
2. A MCData communication is ongoing between MCData participants and authorized MCData user is keeping track of which participants are receiving communication e.g. through "message delivered" and/or "message read" indications for the MCData communication
3. MCData client 1 is the initiator of the MCData communication.

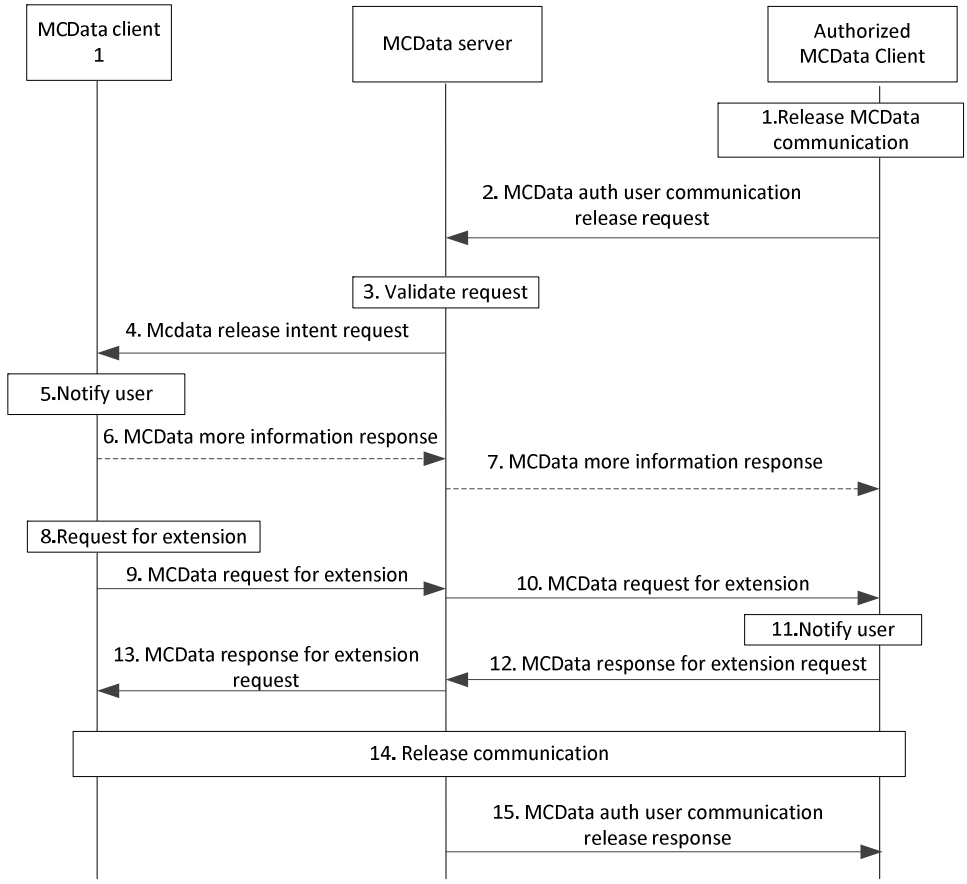

Figure 7.7.2.6.2-1: An authorized MCData user initiates communication release with prior indication

1. An authorized MCData user requests to release the ongoing MCData communication by providing prior indication to the initiator of MCData communication, MCData client 1.

2. An authorized MCData client sends MCData auth user communication release request towards MCData server including the communication identifier identifying the MCData communication to release. Authorized MCData client may include request for more information (e.g. to know the remaining data volume to transmit). The request also includes indication to MCData server to release MCData communication with prior indication to the initiator MCData client.

3. MCData server validates the user from whom the communication release request is received and checks whether the requesting user is authorized to release communication or not.

4. If the user is authorized to release communication, then the MCData server sends MCData release intent request, may be including the reason for the release. MCData server may include request for more information as received in the request from the authorized MCData client.

5. MCData client informs MCData user about the intent to release communication by the authorized MCData user.

6. If request for more information is included in the received MCData release intent request, MCData client 1 sends MCData more information response including the remaining amount of data to transmit.

7. MCData server forwards the MCData more information response to the authorized MCData client.

NOTE: Upon receiving more information response from MCData client 1, MCData server may wait for the request for extension until the time configured by the MCData administrator. If MCData server does not receive request for extension within the configured timeout, the MCData server releases MCData communication as described in subclause 7.7.2.3. Otherwise, continue with remaining steps.

8. MCData user at MCData client 1 decides to request for extension of the ongoing MCData communication.

9 and 10. MCData client sends MCData request for extension towards MCData server. And MCData server forwards the MCData request for extension towards the authorized MCData client.

11. Authorized MCData client notifies the authorized user about the incoming request for extension. An authorized MCData user decides to accept or reject the request for extension.

12 and 13. Authorized MCData user decision is sent in MCData response for extension request towards the MCData server. MCData server forwards the MCData response for extension request to MCData client 1.

14. MCData communication will continue if the authorized user accepted the request for extension from MCData client 1. Otherwise, MCData communication will be released according to procedures described in subclause 7.7.2.3.

15. After MCData communication is released, MCData server sends the MCData auth user communication release response back to the authorized MCData client.

7.8 Conversation management

7.8.1 General

Conversation management is a collection of related MCData transmissions for a given activity. Conversation management associates SDS and FD communication transmission and present them as a single thread to the user.

Conversation management for on-network is described in clause 7.8.2 and for off-network in clause 7.8.3. Off-network conversation management is based on ProSe capabilities as described in clause 7.16.

7.8.2 Conversation management for on-network

7.8.2.1 Information flows for conversation management

The information flow parameters related to conversation management are as described in the subclauses 7.4.2.1 and subclauses 7.5.2.1.5, 7.5.2.1.6, 7.5.2.1.7, 7.5.2.1.8, 7.5.2.1.9, 7.5.2.1.10, 7.5.2.1.11, 7.5.2.1.12, and 7.5.2.1.13.

7.8.2.2 One-to-one conversation management

7.8.2.2.1 Procedure

The procedure for an MCData user to associate multiple MCData transmissions between a pair of users for a given activity is illustrated in figure 7.8.2.2.1-1.

Pre-conditions:

1. MCData user(s) on MCData client 1 and 2 are registered for receiving MCData service.

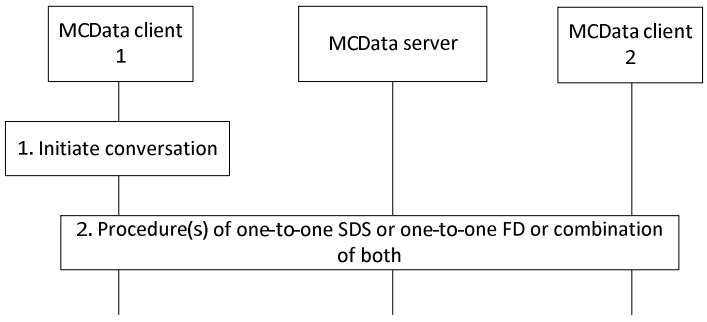

Figure 7.8.2.2.1-1: One-to-one conversation management

1. The user at MCData client 1 initiates conversation. A universally unique conversation identifier is generated to identify new conversation. Conversation identifier is used in procedures mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier is used in procedures mentioned in step 2. To allow multiple parallel conversations for the same pair of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of one-to-one SDS or one-to-one FD or combination of both these procedures can be executed.

7.8.2.3 Group conversation management

7.8.2.3.1 Procedure

The procedure for an MCData user to associate multiple MCData transmissions between users of a group for a given activity is illustrated in figure 7.8.2.3.1-1.

Pre-conditions:

1. MCData user(s) on MCData client 1, 2, and n are registered for receiving MCData service.

2. The MCData users 1, 2 and n are members of the same MCData group and affiliated to the MCData service.

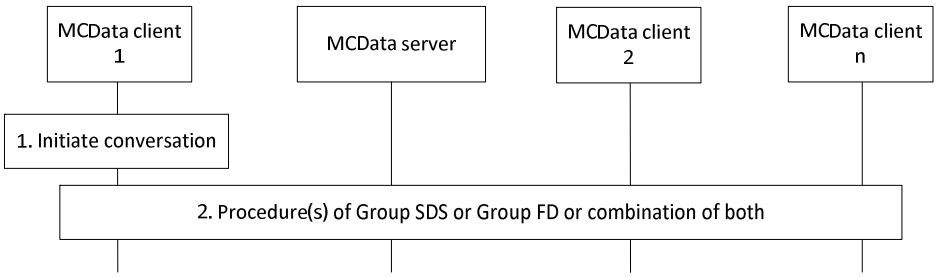

Figure 7.8.2.3.1-1: Group conversation management

1. The user at MCData client 1 initiates conversation. A unique conversation identifier is generated to identify new conversation. Conversation identifier is used in procedures mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier is used in procedures mentioned in step 2. To allow multiple parallel conversations for the same group of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of group SDS or group FD or combination of both these procedures can be executed.

7.8.3 Conversation management for off-network

7.8.3.1 One-to-one conversation management

7.8.3.1.1 Procedure

The procedure for an MCData user to associate multiple off-network MCData transmissions between a pair of users is illustrated in figure 7.8.3.1.1-1.

Pre-conditions:

1. MCData client 1 and MCData client 2 are members of the same ProSe Discovery group and are ProSe 1:1 direct communication capable.

2. MCData client 1 has discovered MCData client 2 in proximity, associated with MCData user B, using ProSe Discovery procedures.

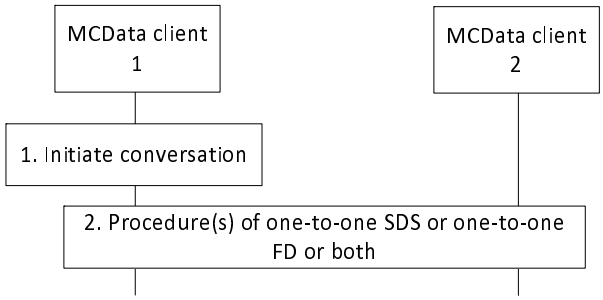

Figure 7.8.3.1.1-1: One-to-one conversation management

1. The user at MCData client 1 initiates conversation. A universally unique conversation identifier is generated to identify the new conversation. Conversation identifier is used in the procedures mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier from the existing conversation is used in the procedures mentioned in step 2. To allow multiple parallel conversations for the same pair of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of one-to-one SDS or one-to-one FD or a combination of these can be executed.

7.8.3.2 Group conversation management

7.8.3.2.1 Procedure

The procedure for an MCData user to associate multiple off-network MCData transmissions between users of a group is illustrated in figure 7.8.3.2.1-1.

Pre-conditions:

1. Information for ProSe direct communications corresponding to the MCData group and its mapping to ProSe Layer-2 Group ID are pre-configured in MCData client 1.

2. MCData client 1 to MCData client N are members of the same MCData group.

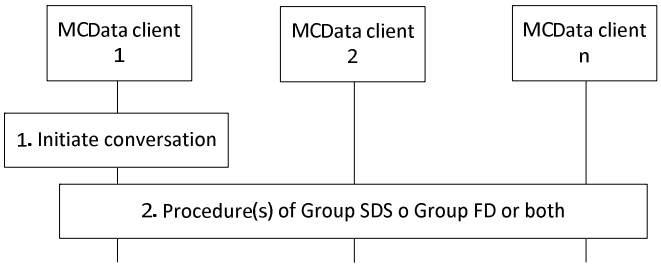

Figure 7.8.3.2.1-1: Group conversation management

1. The user at MCData client 1 initiates conversation. A universally unique conversation identifier is generated to identify the new conversation. Conversation identifier is used in the procedures mentioned in step 2. If the intent

of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier from the existing conversation is used in the procedures mentioned in step 2. To allow multiple parallel conversations for the same group of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of group SDS or group FD or combination of both can be executed.

7.9 Enhanced status

7.9.1 General

Enhanced status corresponds to information specific to the activities performed by the mission critical service users during their operation(s) e.g. available, in operation on site, going to the operation site, or just arrived.

Enhanced status for on-network is described in clause 7.9.3 and for off-network in clause 7.9.4. Off-network enhanced status is based on ProSe capabilities as described in clause 7.16.

7.9.2 Preset values for enhanced status

The enhanced status information i.e. the set of possible values corresponding to the activities of the MCData user, shall be configured by the MCData administrator. The configuration of status values is applicable on a per-group basis, and therefore shall be part of the MCData group configuration data as described in Annex A.4.

The configuration mechanism shall allow the MCData administrator to configure a minimum of 32 possible values and allow up to 65536 separate values. The set of values may be divided into a fixed set of values defined by 3GPP standards which are common across all MCData systems, and a set which may be freely configured for any purpose.

7.9.3 Enhanced status for on-network

7.9.3.1 Sharing enhanced status information

7.9.3.1.1 Procedure

The procedure for an MCData user to share the enhanced status information to the members of the selected group is illustrated in figure 7.9.3.1.1-1.

Pre-conditions:

1. MCData user(s) on MCData client 1, 2, and n are registered for receiving MCData service.
2. The MCData users 1, 2 and n are members of the same MCData group and affiliated to the MCData service.
3. The MCData group is pre-configured with the possible values for enhanced status information.

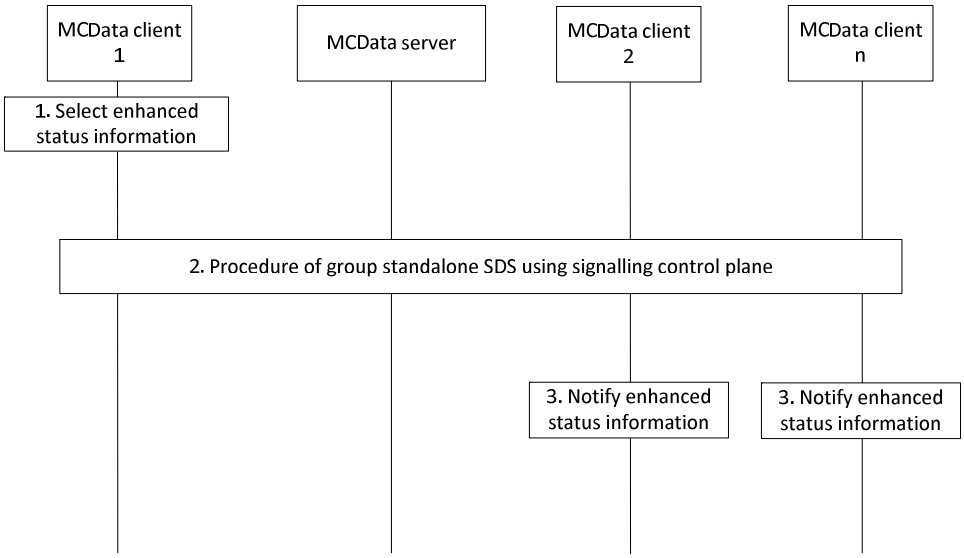

Figure 7.9.3.1.1-1: Sharing enhanced status information

1. The user at MCData client 1 selects the MCData group to share the enhanced status information. The user also selects the value of the status information to be shared from the list of pre-configured status values available for the MCData group.
2. The procedure of group standalone SDS using signalling control plane as described in subclause 7.4.2.5, is used to deliver the enhanced status information.
3. The MCData users at MCData client 2 and n are notified of the enhanced status information.

7.9.4 Enhanced status for off-network

7.9.4.1 Sharing enhanced status information

7.9.4.1.1 Procedure

The procedure for an MCData user to share the enhanced status information to the members of the selected group is illustrated in figure 7.9.4.1.1-1.

Pre-conditions:

1. Information for ProSe direct communications corresponding to the MCData group and its mapping to ProSe Layer-2 Group ID are pre-configured in MCData client 1.
2. MCData client 1, 2 and n are members of the same MCData group.
3. The MCData group is pre-configured with the possible values for enhanced status information.

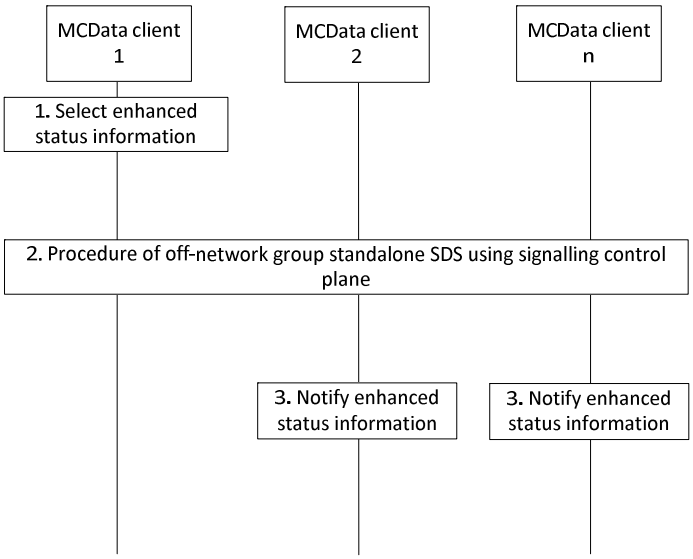

Figure 7.9.4.1.1-1: Sharing enhanced status information

1. The user at MCData client 1 selects the MCData group to share the enhanced status information. The user also selects the value of the status information to be shared from the list of pre-configured status values available for the MCData group.
2. The procedure of off-network group standalone SDS using signalling control plane as described in subclause 7.4.3.4, is used to deliver the enhanced status information.
3. The MCData users at MCData client 2 and n are notified of the enhanced status information.

7.10 MCData emergency alert (on-network and off-network)

The MCData service shall support the procedures and related information flows as specified in subclause 10.10 of 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCData client;
- The MC service server is the MCData server;
- The MC service group ID is the MCData Group ID; and
- The MC service user profile index is the MCData user profile index.

7.11 User authentication and authorization for MCData service

NOTE: Flow 7.11-1 is a high level user authentication and authorization flow. 3GPP TS 33.180 [13] defines the specific user authentication and authorization architecture required by the MCData service in order to realize the MCData user authentication and authorization requirements as defined in 3GPP TS 22.280 [2].

A procedure for user authentication is illustrated in figure 7.11-1. The user authentication is performed based on the procedure specified in subclause 10.6 of 3GPP TS 23.280 [5].

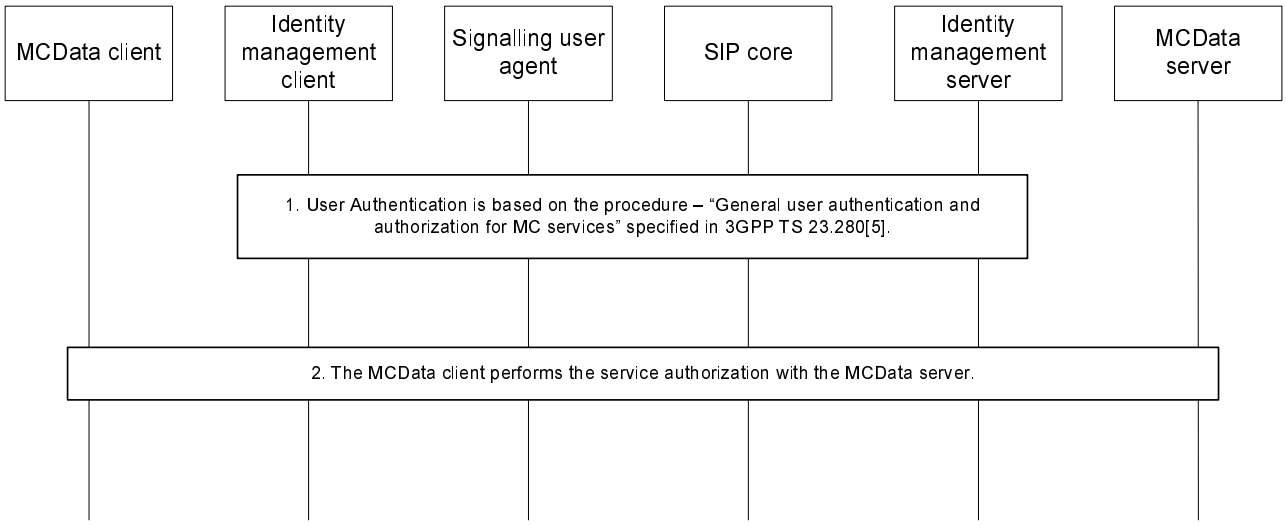

Figure 7.11-1: MCData user authentication and registration, single domain

1. The user authentication is performed as per the general user authentication procedure specified in subclause 10.6 of 3GPP TS 23.280 [5].

2. MCData client performs the MCData service authorization for the user. Step 2 utilizes the results of step 1.

7.12 MCData resource management (on-network)

7.12.1 General

Procedures for resource management are defined in subclause 10.11 of 3GPP TS 23.280 [5].

7.12.2 MCData services not handled by SIP core

MCData services that do not utilize the SIP core e.g. IP connectivity, cannot utilize the resource control functionality of the local outbound / inbound proxy. For these types of service, resource management is handled directly by the Rx interface from the MCData server to the PCRF, which is the MCData-5 reference point. The Rx interface is defined in 3GPP TS 29.214 [17].

The same types of resource management procedures as defined for SIP based services in 3GPP TS 23.280 [5] may also be applied for non SIP based services. That is:

- Request for unicast resources at session establishment (in this case service initiation);
- Request for modification of unicast resources; and
- Request for resources with shared priority.

7.13 Operations on MCData message store

The MCData message store allows an MCData user to deposit his MCData communication information (i.e. messages or files) securely and permanently for later retrieval. During an active MCData communication, a message or a file with its associated metadata is deposited as an object in the MCData message store with an object identifier; this object identifier enabling a direct access to that object. The objects in the MCData message store are managed from both the MCData server and the message store client.

Each MCData user is allocated a dedicated and secured storage area (i.e. with a user account) in the MCData message store. All MCData communications of a MCData user can be stored in his dedicated storage area. The access to this secured storage area is possible only after successful authentication and authorization procedures. A message store client can create a local copy of the stored objects into the device by synchronizing with the MCData message store for the MCData user using the device.

7.13.1 MCData message store structure

MCData message store supports a tree like architecture to securely store MCData communications for the MCData users. Figure 7.13.1 below illustrates the high-level structure of a MCData message store:

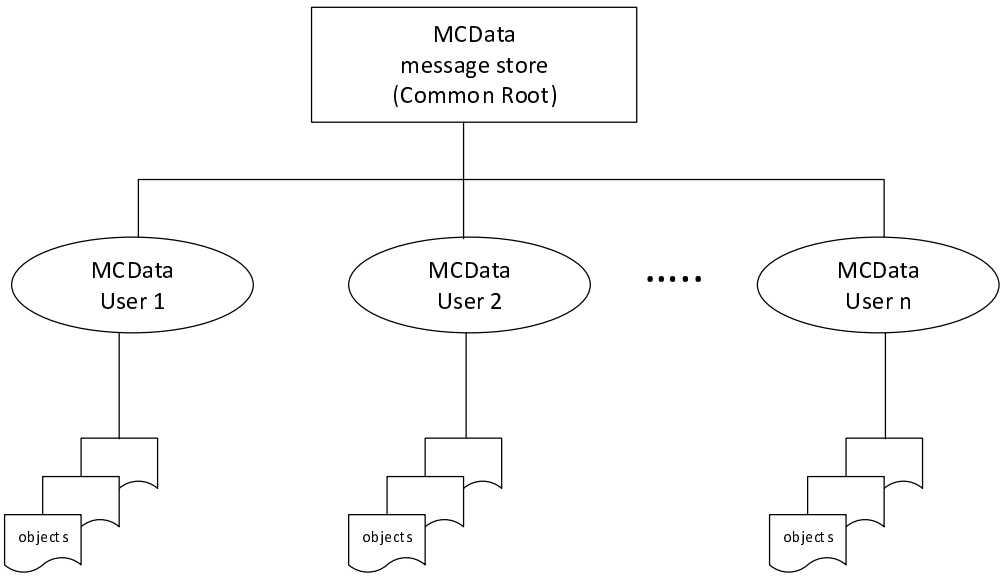

Figure 7.13.1 Message store structure

As illustrated in Figure 7.13.1 all MCData user storage areas are accessed only through the common root. The authorized MCData user shall only have the access to the MCData user's storage area after the successful authentication and authorization procedures. A MCData user shall not be able to access objects stored for other MCData users.

The MCData user shall manage his stored objects using message store client through the MCData-7 reference point. The MCData server shall use the MCData-8 reference point to deposit MCData communication information, during an active MCData communication, into the designated MCData user's storage area in the MCData message store.

One way to manage user stored objects is using folder hierarchy structure like the popular email system today. Annex D provides a simple example of how it will look like in deployment. When the user account is created in the MCData message store, a default folder (such as Inbox) is also created to capture all the objects during an active communication. To group relevant stored objects together and provide easier navigation interactively, a MCData user can create folders in his user account. Each folder is identified by its unique folder identifier that is composed with the location of the folder and the name of the folder. A folder may have child folders to further group the stored objects in more meaningful ways. For example, the folder identifier of the default Inbox folder is /MCDatamessagestore /MCDatauser1/Inbox. The folder identifier /MCDatamessagestore/MCDatauser1/Squad1/20190225 points to a folder named 20190225 which is a child folder of Squad1 folder in the MCData user1 user account.

NOTE: The details of how the objects are stored in the MCData message store is out of scope of the present document.

7.13.2 Authentication and authorization

The MCData message store shall authenticate the credential of MCData server or the authorized MCData user before authorizing access to the MCData user's storage area. The success of authentication and authorization shall allow access to that MCData user's storage area only.

NOTE: The authentication and authorization aspects of MCData message store access and its operational supports are the responsibility of SA3 and thus outside the scope of the present document.

7.13.3 Manage MCData message store

7.13.3.1 Information flows for managing MCData message store

7.13.3.1.1 MCData retrieve a stored object request

Table 7.13.3.1.1-1 describes the information flow for the MCData retrieve a stored object request sent from the message store client to the MCData message store.

Table 7.13.3.1.1-1: MCData retrieve a stored object request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object identifier	M	The object identifier of the object stored in the MCData message store

7.13.3.1.2 MCData retrieve a stored object response

Table 7.13.3.1.2-1 describes the information flow for the MCData retrieve a stored object response sent from the MCData message store to the message store client.

Table 7.13.3.1.2-1: MCData retrieve a stored object response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Stored object	M	The stored object identified by the object identifier in the request. This information element shall be returned as empty when there is no stored object can be identified by the object identifier in the request

7.13.3.1.3 MCData search stored objects request

Table 7.13.3.1.3-1 describes the information flow for the MCData search stored objects request sent from the message store client to the MCData message store.

Table 7.13.3.1.3-1: MCData search stored objects request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Search criteria	M	Any part of the stored object can be the search criteria. Linking multiple parts of a stored object as the search criteria is possible

7.13.3.1.4 MCData search stored objects response

Table 7.13.3.1.4-1 describes the information flow for the MCData search stored objects response sent from the MCData message store to the message store client.

Table 7.13.3.1.4-1: MCData search stored objects response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Stored object(s)	M	The stored object(s) that meets the search criteria. This information element shall be returned as empty when there is no stored object can be identified by the search criteria in the request

7.13.3.1.5 MCData update a stored object request

Table 7.13.3.1.5-1 describes the information flow for the MCData update a stored object request sent from the message store client to the MCData message store.

Table 7.13.3.1.5-1: MCData update a stored object request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object identifier	M	The object identifier of the object stored in the MCData message store
Metadata	M	The metadata that will be updated

7.13.3.1.6 MCData update a stored object response

Table 7.13.3.1.6-1 describes the information flow for the MCData update a stored object response sent from the MCData message store to the message store client.

Table 7.13.3.1.6-1: MCData update a stored object response

Information element	Status	Description
MCData ID	M	The identity of the MCData user storage area in the MCData message store
Result	M	The result if the update is success or failure

7.13.3.1.7 MCData delete a stored object request

Table 7.13.3.1.7-1 describes the information flow for the MCData delete a stored object request sent from the message store client to the MCData message store.

Table 7.13.3.1.7-1: MCData delete a stored object request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object identifier	M	The object identifier of the object stored in the MCData message store

7.13.3.1.8 MCData delete a stored object response

Table 7.13.3.1.8-1 describes the information flow for the MCData delete a stored object response sent from the MCData message store to the message store client.

Table 7.13.3.1.8-1: MCData delete a stored object response

Information element	Status	Description
MCData ID	M	The identity of the MCData user storage area in the MCData message store
Result	M	The result if the delete is success or failure

7.13.3.1.9 MCData synchronization request

Table 7.13.3.1.9-1 describes the information flow for the MCData synchronization request sent from the message store client to the MCData message store.

Table 7.13.3.1.9-1: MCData synchronization request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Synchronization type	M	Indicates the type of synchronization is requested. It can be a full or partial synchronization
Filter criteria (see NOTE)	O	The filter criteria indicate what kind of stored objects needs to be synchronized to the device local message store
NOTE: Filter criteria information element shall be presented if the Synchronization type is partial.		

7.13.3.1.10 MCData synchronization response

Table 7.13.3.1.10-1 describes the information flow for the MCData synchronization response sent from the MCData message store to the message store client.

Table 7.13.3.1.10-1: MCData synchronization response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Stored objects	M	The stored objects that need to be synchronized with the device local message store. Empty information element means no stored objects need to be synchronized

7.13.3.1.11 MCData create a user account request

Table 7.13.3.1.11-1 describes the information flow for the MCData create a user account request sent from the MCData server to the MCData message store.

Table 7.13.3.1.11-1: MCData create a user account request

Information element	Status	Description
MCData ID	M	The identity of the MCData user

7.13.3.1.12 MCData create a user account response

Table 7.13.3.1.12-1 describes the information flow for the MCData create a user account response sent from the MCData message store to the MCData server.

Table 7.13.3.1.12-1: MCData create a user account response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the account creation is success or failure

7.13.3.1.13 MCData deposit an object request

Table 7.13.3.1.13-1 describes the information flow for the MCData deposit an object request sent from the MCData server to the MCData message store.

Table 7.13.3.1.13-1: MCData deposit an object request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Retrieve file indication	O	Flag to instruct the MCData message store to retrieve the file to locally store in the MCData user's account
Object	M	The object needs to be stored

7.13.3.1.14 MCData deposit an object response

Table 7.13.3.1.14-1 describes the information flow for the MCData deposit an object response sent from the MCData message store to the MCData server.

Table 7.13.3.1.14-1: MCData deposit an object response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object Identifier	M	The object identifier that will be used to retrieve this object in the MCData message store directly. If this information element is empty it means the object is not stored

7.13.3.1.15 MCData copy a stored object request

Table 7.13.3.1.15-1 describes the information flow for the MCData copy a stored object request sent from the message store client to the MCData message store.

Table 7.13.3.1.15-1: MCData copy a stored object request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object identifier	M	The object identifier of the object stored in the MCData message store
Destination folder identifier	M	Indicates where the object will be copied to

7.13.3.1.16 MCData copy a stored object response

Table 7.13.3.1.16-1 describes the information flow for the MCData copy a stored object response sent from the MCData message store to the message store client.

Table 7.13.3.1.16-1: MCData copy a stored object response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the operation is success or failure

7.13.3.1.17 MCData move a stored object request

Table 7.13.3.1.17-1 describes the information flow for the MCData move a stored object request sent from the message store client to the MCData message store.

Table 7.13.3.1.17-1: MCData move a stored object request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object identifier	M	The object identifier of the object stored in the MCData message store
Destination folder identifier	M	Indicates where the object will be moved to.

7.13.3.1.18 MCData move a stored object response

Table 7.13.3.1.18-1 describes the information flow for the MCData move a stored object response sent from the MCData message store to the message store client.

Table 7.13.3.1.18-1: MCData move a stored object response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the operation is success or failure

7.13.3.1.19 MCData create folder request

Table 7.13.3.1.19-1 describes the information flow for the MCData create folder request sent from the message store client to the MCData message store.

Table 7.13.3.1.19-1: MCData create folder request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Parent folder identifier	O	The parent folder identifier of the created folder
Folder name	O	Indicates the name of the new folder

7.13.3.1.20 MCData create folder response

Table 7.13.3.1.20-1 describes the information flow for the MCData create folder response sent from the MCData message store to the message store client.

Table 7.13.3.1.20-1: MCData create folder response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the operation is success or failure
Folder identifier	O	The identifier of the folder that is created

7.13.3.1.21 MCData delete folder request

Table 7.13.3.1.21-1 describes the information flow for the MCData delete folder request sent from the message store client to the MCData message store.

Table 7.13.3.1.21-1: MCData delete folder request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Folder identifier	M	The identifier of the folder to be deleted

7.13.3.1.22 MCData delete folder response

Table 7.13.3.1.22-1 describes the information flow for the MCData delete folder response sent from the MCData message store to the message store client.

Table 7.13.3.1.22-1: MCData delete folder response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the operation is success or failure

7.13.3.1.23 MCData copy folder request

Table 7.13.3.1.23-1 describes the information flow for the MCData copy folder request sent from the message store client to the MCData message store.

Table 7.13.3.1.23-1: MCData copy folder request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Source folder identifier	M	The identifier of the folder to copy from
Destination folder identifier	M	The identifier of the folder to copy to
New folder name (see NOTE)	O	Indicates the name of the new folder
NOTE: If no new folder nameinformation element is provided, the new folder name will be the same as the source folder name.		

7.13.3.1.24 MCData copy folder response

Table 7.13.3.1.24-1 describes the information flow for the MCData copy folder response sent from the MCData message store to the message store client.

Table 7.13.3.1.24-1: MCData copy folder response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the operation is success or failure
New folder identifier	M	Indicates the identifier of the new folder

7.13.3.1.25 MCData move folder request

Table 7.13.3.1.25-1 describes the information flow for the MCData move folder request sent from the message store client to the MCData message store.

Table 7.13.3.1.25-1: MCData move folder request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Source folder identifier	M	The identifier of the folder to be moved
Destination folder identifier	M	The identifier of the folder to move to
New folder name (see NOTE)	O	Indicates the name of the new folder
NOTE: If no new folder name information element is provided, the new folder name will be the same as the source folder name.		

7.13.3.1.26 MCData move folder response

Table 7.13.3.1.26-1 describes the information flow for the MCData move folder response sent from the MCData message store to the message store client.

Table 7.13.3.1.26-1: MCData move folder response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	The result if the operation is success or failure
New folder identifier	M	Indicates the identifier of the new folder

7.13.3.1.27 MCData list folder request

Table 7.13.3.1.27-1 describes the information flow for the MCData list folder request sent from the message store client to the MCData message store.

Table 7.13.3.1.27-1: MCData list folder request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Folder identifier	O	The identifier of the folder to be listed

7.13.3.1.28 MCData list folder response

Table 7.13.3.1.28-1 describes the information flow for the MCData list folder response sent from the MCData message store to the message store client.

Table 7.13.3.1.28-1: MCData list folder response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result (see NOTE)	M	The result of the list operation
NOTE: If no folder identifier information element is provided in the request, the MCData message store returns folders from the root of the user account. If folder identifier information element is provided in the request, the MCData message store returns the child folders from that folder identifier provided.		

7.13.3.1.29 MCData upload objects request

Table 7.13.3.1.29-1 describes the information flow for the MCData upload objects request sent from the message store client to the MCData message store.

Table 7.13.3.1.29-1: MCData upload objects request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Targeted folder identifier	M	The folder where the uploaded objects will be stored
Uploaded objects	M	The objects in the client that need to be uploaded to the MCData message store

7.13.3.1.30 MCData upload objects response

Table 7.13.3.1.30-1 describes the information flow for the MCData upload objects response sent from the MCData message store to the message store client.

Table 7.13.3.1.30-1: MCData upload objects response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object upload result	M	Indicates if the objects upload is successful or not

7.13.3.1.31 MCData synchronization notification

Table 7.13.3.1.31-1 describes the information flow for the MCData synchronization notification sent from the MCData message store to the message store client.

Table 7.13.3.1.31-1: MCData synchronization notification

Information element	Status	Description
MCData ID	M	The identity of the MCData user that the notification is for

7.13.3.1.32 Create notification channel request

Table 7.13.3.1.32-1 describes the information flow for the create notification channel request sent from the message notification client to the MCData notification server.

Table 7.13.3.1.32-1: Create notification channel request

Information element	Status	Description
MCData ID	M	The identity of the MCData client initiating the request
Validity duration	O	How long the notification channel is intended to be used (see NOTE)
Channel Type	M	Indicates if PULL (e.g. long-polling method) or PUSH method will be used to deliver notification messages
NOTE: If this element not present, a default validity duration shall be provided by the server in response		

7.13.3.1.33 Create notification channel response

Table 7.13.3.1.33-1 describes the information flow for the create notification channel response sent from the MCData notification server to the message notification client.

Table 7.13.3.1.33-1: 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 (i.e. channel lifetime) as granted by the MCData notification server
Notification URL	O	The URL to receive the notification message if a Pull method is requested . For some PUSH method implementation (such as WebSockets) this URL is used to start the PUSH notification service from the MCData notification server
Callback URL	M	The URL used by the Message notification client to subscribe to MCData message store notifications

7.13.3.1.34 Open notification channel

Table 7.13.3.1.34-1 describes the information flow for the open notification channel sent from the message notification client to the MCData notification server.

Table 7.13.3.1.34-1: Open 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

7.13.3.1.35 Subscribe for notification request

Table 7.13.3.1.35-1 describes the information flow for the subscribe for notification request sent from the message store client to the MCData message store.

Table 7.13.3.1.35-1: 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
Validity duration	M	How long the subscription to notification will last (i.e. subscription lifetime); this value shall be the returned value in the create notification channel response

7.13.3.1.36 Subscribe for notification response

Table 7.13.3.1.36-1 describes the information flow for the subscribe for notification response sent from the MCData message store to the message store client.

Table 7.13.3.1.36-1: Subscribe for notification response

Information element	Status	Description
MCData ID	M	The identity of the MCData client initiating the request
Validity duration	M	How long the subscription of notification will last (i.e. subscription lifetime) as granted by the server
Result	M	Indicates if the subscription is success or failure

7.13.3.1.37 MCData search folder request

Table 7.13.3.1.37-1 describes the information flow for the MCData search folder request sent from the message store client to the MCData message store.

Table 7.13.3.1.37-1: MCData search folder request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Search criteria	M	Any part of the folder information (such as metadata) can be used as the search criteria. Linking multiple parts of the folder information as the search criteria is possible

7.13.3.1.38 MCData search folder response

Table 7.13.3.1.38-1 describes the information flow for the MCData search folder response sent from the MCData message store to the message store client.

Table 7.13.3.1.38-1: MCData search folder response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Folder identifier(s)	M	The folder(s) that meets the search criteria. This information element shall be returned as empty if there is no folder matching the search criteria

7.13.3.1.39 MCData retrieve folder content request

Table 7.13.3.1.39-1 describes the information flow for the MCData retrieve folder content request sent from the message store client to the MCData message store.

Table 7.13.3.1.39-1: MCData retrieve folder content request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Folder identifier	M	The identifier of the folder its content is requested to be returned

7.13.3.1.40 MCData retrieve folder content response

Table 7.13.3.1.40-1 describes the information flow for the MCData retrieve folder content response sent from the MCData message store to the message store client.

Table 7.13.3.1.40-1: MCData retrieve folder content response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Folder content	M	The content of the requested folder; such as objects and subfolders. This information element shall be returned as empty if the requested folder is not found.

7.13.3.1.41 MCData retrieve file to store locally request

Table 7.13.3.1.41-1 describes the information flow for the MCData retrieve file to store locally request sent from the message store client to the MCData message store and from the MCData server to the MCData message store.

Table 7.13.3.1.41-1: MCData retrieve file to store locally request

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Object identifier	M	The object identifier of the FD communication object stored in the MCData message store

7.13.3.1.42 MCData retrieve file to store locally response

Table 7.13.3.1.42-1 describes the information flow for the MCData retrieve file to store locally response sent from the MCData message store to the message store client and the MCData server.

Table 7.13.3.1.42-1: MCData retrieve file to store locally response

Information element	Status	Description
MCData ID	M	The identity of the MCData user
Result	M	Indicates success or failure of MCData update FD object with file content request
Content reference	O	URL reference to the file content stored in the MCData user's storage area
NOTE: Content reference shall be present if the content stored into the MCData user's storage area successfully.		

7.13.3.1.43 Update notification channel request

Table 7.13.3.1.43 describes the information flow for the update notification channel request sent from the message notification client to the MCData notification server.

Table 7.13.3.1.43: Update 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 will last (i.e. channel lifetime) as requested by the Message notification client.

7.13.3.1.44 Update notification channel response

Table 7.13.3.1.44 describes the information flow for the update notification channel response sent from the MCData notification server to the message notification client.

Table 7.13.3.1.44: Update 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 (i.e. channel lifetime) as granted by the MCData notification server
Result	M	Indicates if the update is success or failure

7.13.3.1.45 Update notification subscription request

Table 7.13.3.1.45 describes the information flow for the update notification subscription request sent from the message store client to the MCData message store.

Table 7.13.3.1.45: Update notification subscription 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 will last (i.e. notification subscription lifetime). This value should be the returned value in the update notification channel response

7.13.3.1.46 Update notification subscription response

Table 7.13.3.1.46 describes the information flow for the update notification subscription response sent from the MCData message store to the message store client.

Table 7.13.3.1.46: Update notification subscription 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 (i.e. notification subscription lifetime) as granted by the MCData message store
Result	M	Indicates if the update is success or failure

7.13.3.1.47 Delete notification channel request

Table 7.13.3.1.47 describes the information flow for the delete notification channel request sent from the message notification client to the MCData notification server.

Table 7.13.3.1.47: Delete notification channel request

Information element	Status	Description
MCData ID	M	The identity of the MCData client initiating the request

7.13.3.1.48 Delete notification channel response

Table 7.13.3.1.48 describes the information flow for the delete notification channel response sent from the MCData notification server to the message notification client.

Table 7.13.3.1.48: Delete notification channel response

Information element	Status	Description
MCData ID	M	The identity of the MCData client initiating the request
Result	M	Indicates if deletion of notification channel is success or failure

7.13.3.1.49 Delete notification subscription request

Table 7.13.3.1.49 describes the information flow for the delete notification subscription request sent from the message store client to the MCData message store.

Table 7.13.3.1.49: Delete notification subscription request

Information element	Status	Description
MCData ID	M	The identity of the MCData client initiating the request

7.13.3.1.50 Delete notification subscription response

Table 7.13.3.1.50 describes the information flow for the delete notification subscription response sent from the MCData message store to the message store client.

Table 7.13.3.1.50: Delete notification subscription response

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

7.13.3.1.51 Notification message

Table 7.13.3.1.51-1 describes the information flow for the notification message sent from the MCData message store to the MCData notification server and from the MCData notification server to the MCData notification client.

Table 7.13.3.1.51-1: Notification message

Information element	Status	Description
Event-data	M	The specific information carried in the notification message to inform the MCData client of changes to the MCData message store. (see NOTE)
NOTE: MCData client uses the event information for actions such as updating its local message store or uses the event as a trigger for inquiring the Message store for desired changes.		

7.13.3.2 Retrieve a stored object

7.13.3.2.1 General

A stored object can be retrieved from the MCData message store with the known object identifier that is generated by the MCData message store when the object was deposited.

7.13.3.2.2 Procedure

The procedure in figure 7.13.3.2.2-1 describes the case when a message store client retrieves a stored object from the MCData message store using the known object identifier.

Pre-conditions:

1. A successful authentication and authorization have been performed between the message store client and the MCData message store.
2. The message store client knows the object identifier of the stored object.

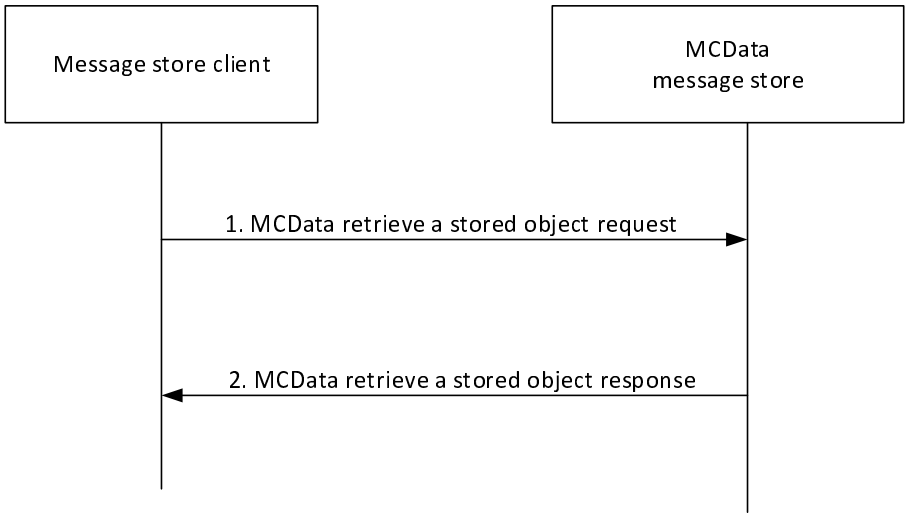

Figure 7.13.3.2.2-1: Retrieve a stored object

1. The message store client would like to retrieve a stored object from the MCData message store and initiates a MCData retrieve a stored object request toward the MCData message store. The unique object identifier of the stored object is included in the request.
2. The MCData message store returns the stored object that is identified by the object identifier in the MCData retrieve a stored object response.

7.13.3.3 Search stored objects

7.13.3.3.1 General

The message store client can search stored objects in the MCData message store with certain criteria. This procedure allows the message store client to look for stored object(s) without knowing the object identifier(s) of the object. This procedure also allows the message store client to retrieve stored objects that are related to each other; such as all messages and files exchanged in a conversation.

7.13.3.3.2 Procedure

The procedure in figure 7.13.3.3.2-1 describes the case when a message store client searches and retrieves relevant stored objects from the MCData message store.

Pre-conditions:

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

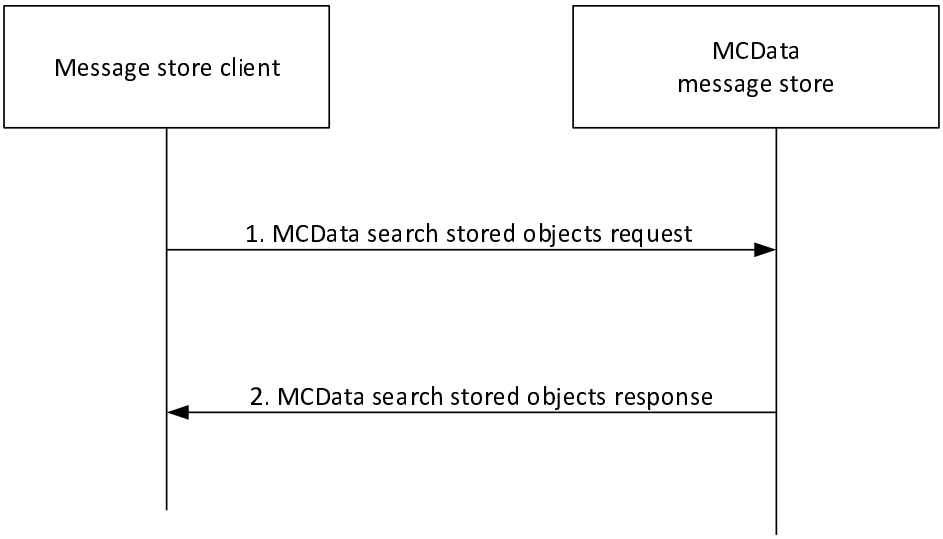

Figure 7.13.3.3.2-1: Search stored objects

1. The message store client would like to retrieve stored objects that meet certain criteria (such as with the same Conversation identifier) and initiates a MCData search objects request toward the MCData message store. The search criteria are included in the request.

2. The MCData message store looks up all stored objects that meet the search criteria and returns them in the MCData search objects response.

7.13.3.4 Update a stored object

7.13.3.4.1 General

The message store client can update the metadata of a stored object (such as mark a stored object as "flagged").

7.13.3.4.2 Procedure

The procedure in figure 7.13.3.4.2-1 describes the case when a message store client updates metadata of a stored object in the MCData message store.

Pre-conditions:

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

2. The message store client knows the object identifier of the stored object.

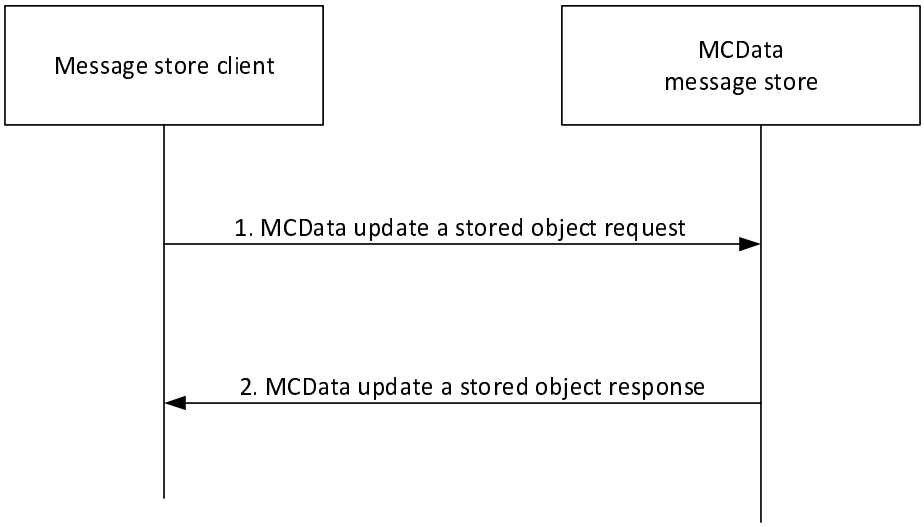

Figure 7.13.3.4.2-1: Update a stored object

1. The message store client would like to update the metadata of a stored object (such as "flagged") and initiates a MCData update a stored object request toward the MCData message store. The stored object's object identifier and the updated meta data are included in the request.
2. The MCData message store locates the stored object with the object identifier and updates its metadata as carried in the MCData update a stored object request and communicates the result in the MCData update a stored object response.

7.13.3.5 Delete a stored object

7.13.3.5.1 General

The message store client of an authorized user can delete a stored object in the MCData message store.

7.13.3.5.2 Procedure

The procedure in figure 7.13.3.5.2-1 describes the case when a stored object in the MCData message store is deleted by the message store client of an authorized MCData user.

Pre-conditions:

1. A successful authentication and authorization have been performed between the message store client and the MCData message store.
2. The message store client knows the object identifierof the stored object.
3. The MCData user is authorized to delete the stored object.

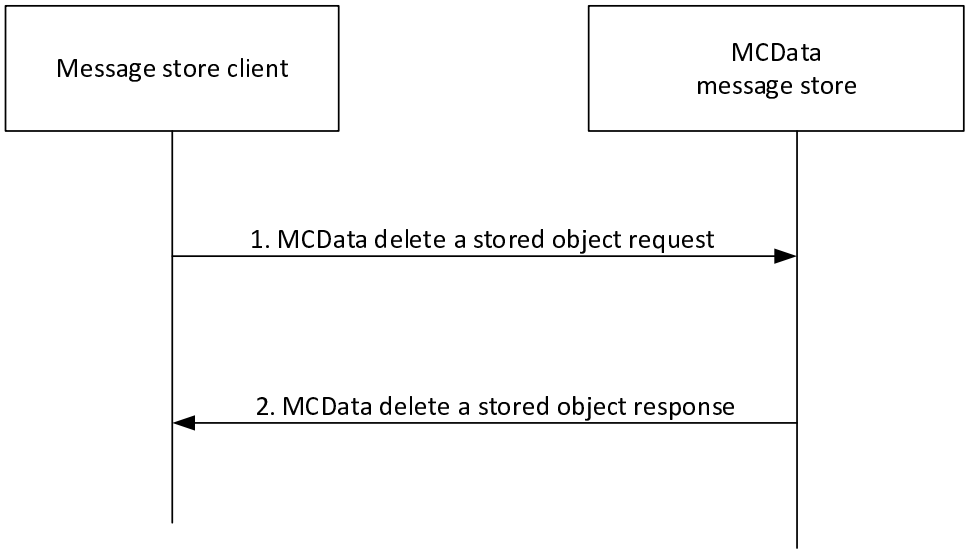

Figure 7.13.3.5.2-1: Delete a stored object

1. The message store client would like to delete a stored object in the MCData message store and initiates a MCData delete a stored object request toward the MCData message store. The stored object's object identifier is included in the request.
2. The MCData message store locates the stored object with the object identifier and permanently removes it from the MCData message store. It then communicates the result in the MCData delete a stored object response.

7.13.3.6 Synchronization

7.13.3.6.1 General

The message store client can synchronize its local message store with the MCData message store. Different level of synchronization shall be supported with a filter in the request.

7.13.3.6.2 Procedure

The procedure in figure 7.13.3.6.2-1 describes the case when a message store client synchronizes its local message store with the MCData message store for a MCData user.

Pre-conditions:

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

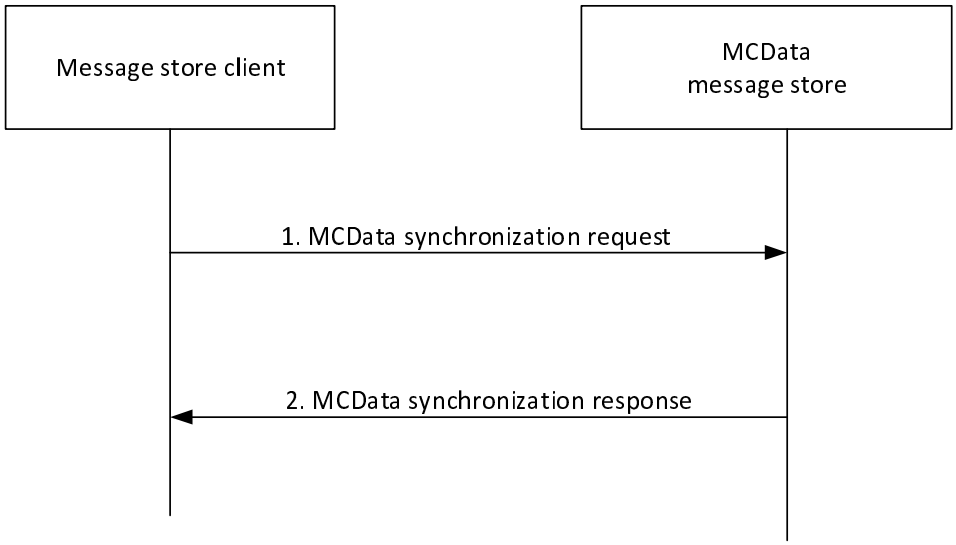

Figure 7.13.3.6.2-1: Synchronization

1. The message store client would like to synchronize its local message store with the MCData message store. It initiates the MCData synchronization request toward the MCData message store. The synchronization type and optional filter criteria are included in the request to indicate the type of synchronization (such as full synchronization, partial synchronization etc.) is requested.
2. The MCData message store returns all the stored objects, based on the synchronization filter criteria, to the message store client in the MCData synchronization response.

7.13.3.7 Create a user account

7.13.3.7.1 General

When the MCData server is ready to deposit an object into the MCData user's storage area in the MCData message store the MCData user's storage area (i.e. user account) needs to be created already. If the user account is not created, the MCData server shall create the user account (i.e. allocate the MCData user's storage area in the MCData message store) first and then deposit the subsequent MCData communications.

NOTE: Another possible way to create a user account on the MCData message store is through service provisioning which is out of the scope of the present document.

7.13.3.7.2 Procedure

The procedure in figure 7.13.3.7.2-1 describes how the MCData server creates a user account (allocate MCData user storage area) in the MCData message store.

Pre-conditions:

1. A successful authentication and authorization has been performed between the MCData server and the MCData message store.
2. No storage area in the MCData message store has been allocated for the MCData user; i.e. no user account has been created.
3. The MCData server is authorized to create user accounts on the MCData message store.

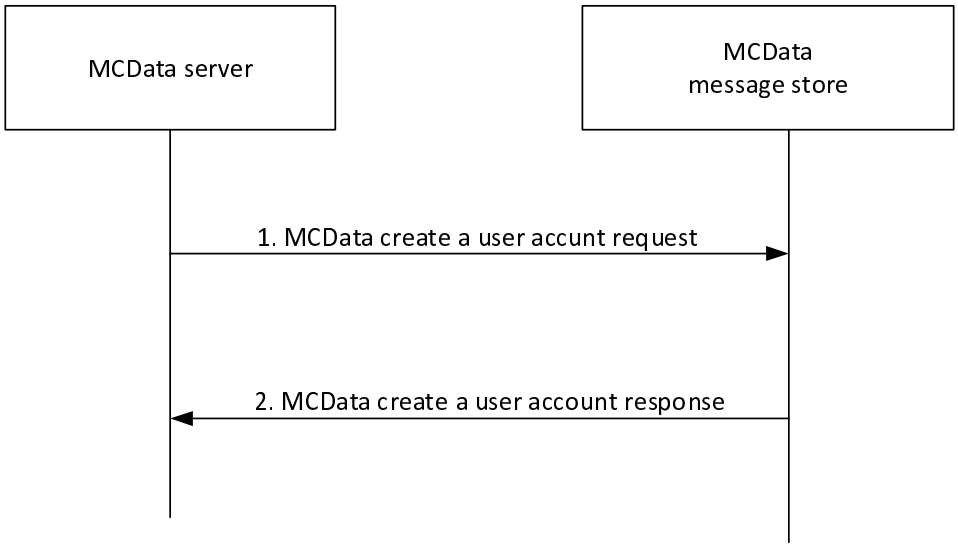

Figure 7.13.3.7.2-1: Create a user account

1. The MCData server would like to create a MCData user account in the MCData message store to store the MCData communication for that MCData user and initiates a MCData create a user account request toward the MCData message store. The MCData ID of the MCData user is included in the request.
2. The MCData message store creates a user account (i.e. allocate dedicated and secured storage area) for the MCData user as specified in the request and communicates the result back to the MCData server in the MCData create a user account response.

7.13.3.8 Deposit an object

7.13.3.8.1 General

MCData server needs to store the communication information (i.e. an object) for a MCData user during an active MCData communication. If there is a file URL in the object for file distribution in the communication, the MCData server may instruct the MCData message store to retrieve a copy of the file to store locally in the MCData user's account.

7.13.3.8.2 Procedure

The procedure in figure 7.13.3.8.2-1 describes how the MCData server deposit an object into the MCData message store during an active MCData communication.

Pre-conditions:

1. A successful authentication and authorization has been performed between the MCData server and the MCData message store.
2. The MCData user has been allocated a secured storage area in the MCData message store.
3. The configuration to store the MCData communication in MCData message store is enabled for the MCData user.
4. MCData user has requested to store his MCData communication and also store the distributed file content into his MCData message store account if the MCData communication is for file distribution through URL.

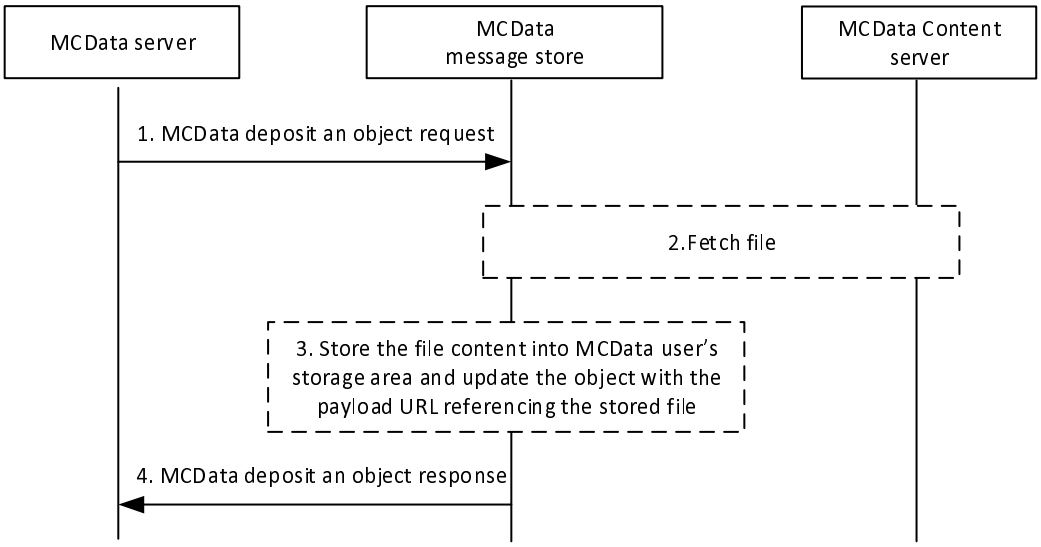

Figure 7.13.3.8.2-1: Deposit an object

1. The MCData server would like to deposit a MCData communication information (i.e. object) to the MCData user's storage area in the MCData message store and initiates a MCData deposit an object request toward the MCData message store. The object is constructed by the MCData server and is included in the request. If the object is a message that carries a URL for file distribution, the MCData server may instruct the MCData message store to retrieve a copy of the file and store locally in the MCData user's account by setting the retrieve file indication information element to true.
2. The MCData message store deposits the object into the MCData user's storage area. If the retrieve file indication is set in the MCData deposit an object request the MCData message store retrieves the file URL from the stored object and fetches the file content from the MCData content server.
3. The MCData message store stores the file content into the MCData user's storage area and update the object with the URL referencing the file content stored in the MCData user's storage area.
4. The MCData message store communicates the result back to the MCData server in the MCData deposit an object response. The object identifier of the stored object is returned.

7.13.3.9 Copy a stored object

7.13.3.9.1 General

A stored object in the MCData message store can be copied to another location (i.e. folder) in the same MCData user account where there is no such object stored. After the successful object copy operation, the object will exist in both the original and destination locations. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.9.2 Procedure

The procedure in figure 7.13.3.9.2-1 describes the case when a stored object is copied to a different location in the same MCData user account.

Pre-conditions:

1. The MCData user has an account in 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 knows the object identifier of the stored object and the destination folder identifier.

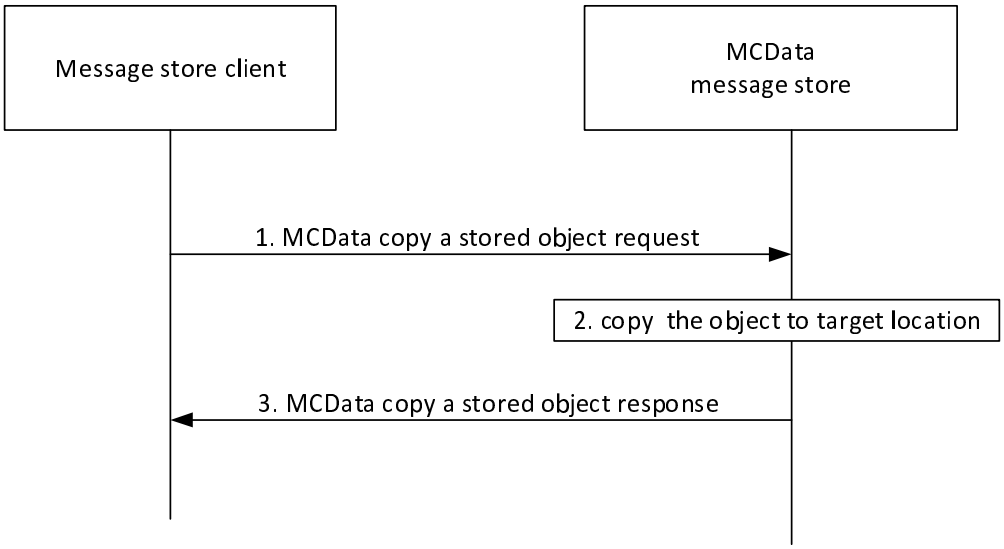

Figure 7.13.3.9.2-1: Copy a stored object

1. The message store client would like to copy a stored object in the MCData message store to a destination folder and initiates a MCData copy a stored object request toward the MCData message store. The uniqe identifier of the stored object and the destination folder are included in the request.
2. The MCData message store copies the object to the target location.
3. The MCData message store returns the result of the request in the MCData copy a stored object response.

7.13.3.10 Move a stored object

7.13.3.10.1 General

A stored object in the MCData message store can be moved to a different location (i.e. folder) in the same MCData user account. After the successful object move operation the object will only exist in the new location. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.10.2 Procedure

The procedure in figure 7.13.3.10.2-1 describes the case when a stored object is moved to a different location in the same MCData user account.

Pre-conditions:

1. The MCData user has an account in 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 knows the object identifier of the stored object and the destination folder identifier.

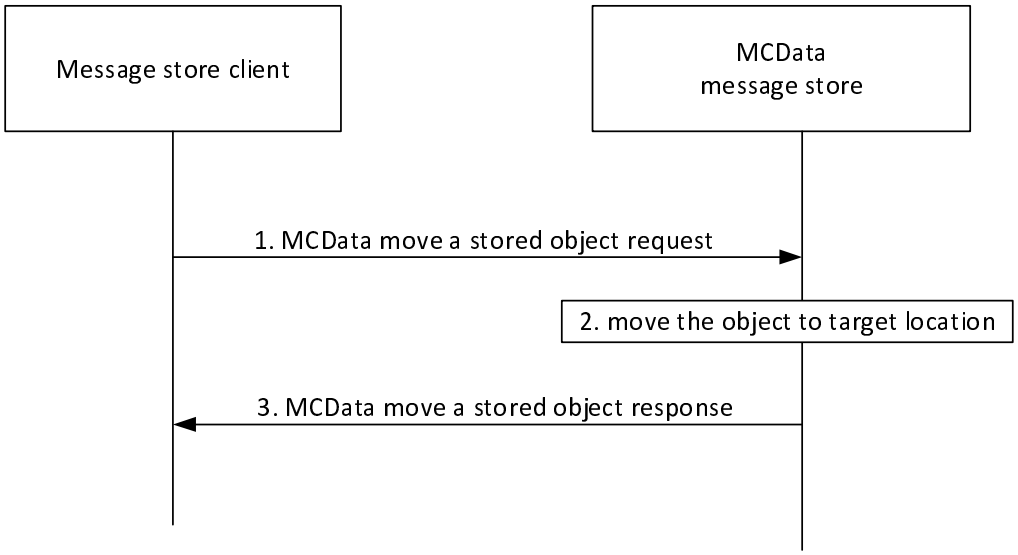

Figure 7.13.3.10.2-1: Move a stored object

1. The message store client would like to move a stored object in the MCData message store to a destination folder and initiates a MCData move a stored object request toward the MCData message store. The uniqe object identifier of the stored object and the destination folder are included in the request.
2. The MCData message store moves the object to the target location.
3. The MCData message store returns the result of the request in the MCData move a stored object response.

7.13.3.11 Folder create operation

7.13.3.11.1 General

A user can create a new folder in his user account n the MCData message store. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.11.2 Procedure

The procedure in figure 7.13.3.11.2-1 describes the case when a MCData user creates a new folder in the MCData message store.

Pre-conditions:

1. The MCData user has an account in the MCData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCData message store.

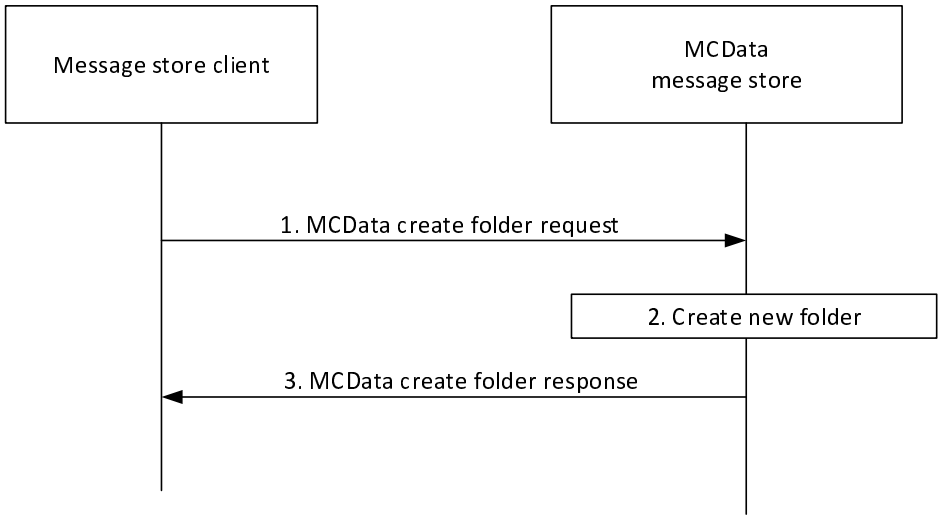

Figure 7.13.3.11.2-1: Create a new user folder

1. The MCData user would like to create a new folder in his user account in the MCData message store, the message store client initiates a MCData create folder request toward the MCData message store. The parent folder identifier and the folder name are included in the request to indicate where the new folder will be created.
2. The MCData message store creates the user folder in the location specified in the request. If the folder name is provided in the request, the MCData message store creates the folder with the provided folder name. If the provided folder name has a conflict or no folder name is provided in the request, the MCData message store assigns a name for the new user folder.
3. The MCData message store returns the result in the MCData create folder response. The identifier of the new folder is returned in the response.

7.13.3.12 Folder delete operation

7.13.3.12.1 General

A user can delete an existing folder in his user account in the MCData message store. All the child folders and objects stored in that folder will be deleted. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.12.2 Procedure

The procedure in figure 7.13.3.12.2-1 describes the case when a MCData user deletes an existing folder in the MCData message store.

Pre-conditions:

1. The MCData user has an account in the MCData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCData message store.

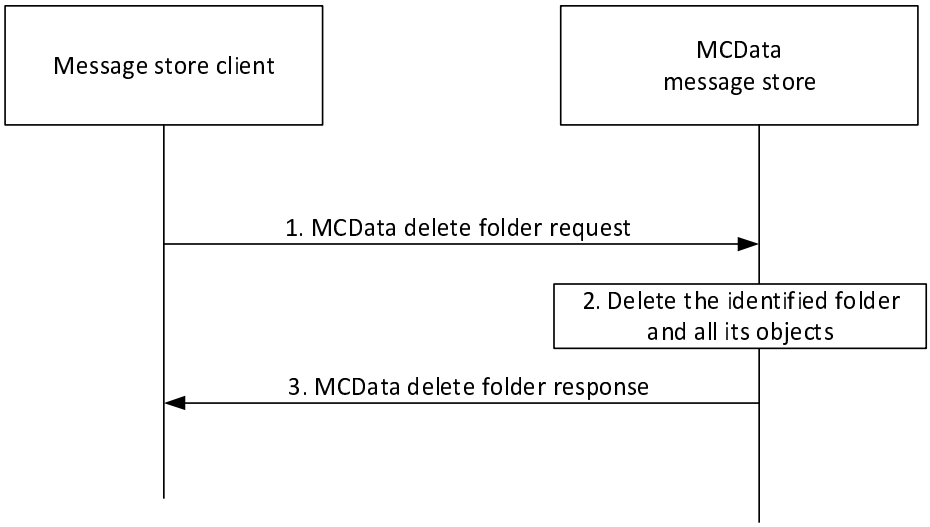

Figure 7.13.3.12.2-1: Delete a user folder

1. The MCData user would like to delete an existing folder in his user account in the MCData message store, the message store client initiates a MCData delete folder request toward the MCData message store. The folder identifier of the folder to be deleted is included in the request.
2. The MCData message store identifies the target folder and deletes it from the user account. All the child folders and objects stored in this folder are also deleted.
3. The MCData message store returns the result in the MCData delete folder response.

7.13.3.13 Folder copy operation

7.13.3.13.1 General

A user can copy an existing folder in his user account to a different location. All the child folders and objects stored in that folder will be copied to the new folder. The name of the new folder will be the same as the folder it copies from or the name provided in the request. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.13.2 Procedure

The procedure in figure 7.13.3.13.2-1 describes the case when a MCData user copies an existing folder in the MCData message store.

Pre-conditions:

1. The MCData user has an account in the MCData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCData message store.

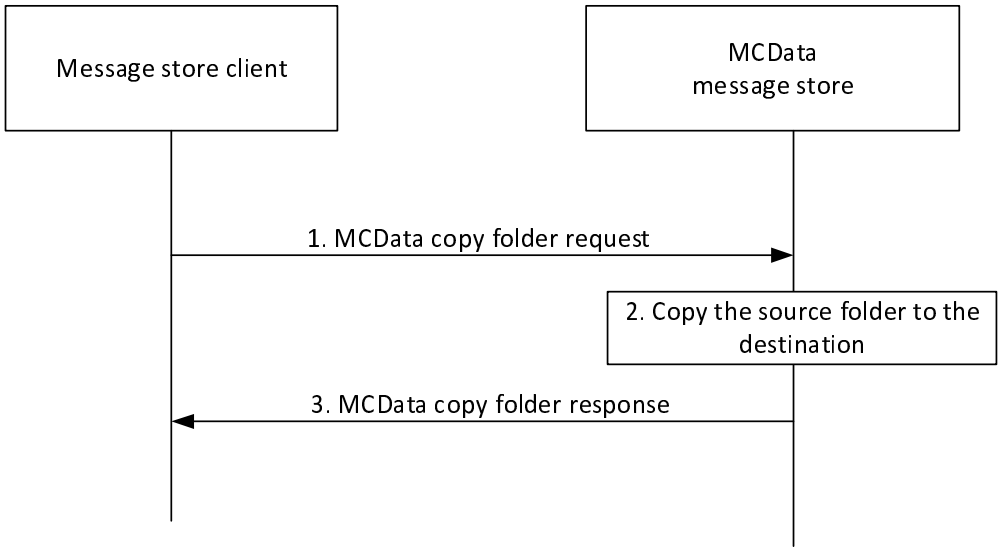

Figure 7.13.3.13.2-1: Copy a user folder

1. The MCData user would like to copy an existing folder in his user account in the MCData message store, the message store client initiates a MCData copy folder request toward the MCData message store. The folder identifiers of the source and destination folders and the new folder name are included in the request.
2. The MCData message store copy the source folder to the destination with the new folder name. If no new folder name is provided in the request, the source folder name will be used. All the child folders and objects stored in this folder are also copied to the new folder.
3. The MCData message store returns the result in the MCData copy folder response. The identifier of the new folder is returned in the response.

7.13.3.14 Folder move operation

7.13.3.14.1 General

A user can move an existing folder in his user account to a different location. All the child folders and objects stored in that folder will be moved to the new folder. The name of the new folder will be the same as the folder it moves from or the name provided in the request. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.14.2 Procedure

The procedure in figure 7.13.3.14.2-1 describes the case when a MCData user moves an existing folder in the MCData message store.

Pre-conditions:

1. The MCData user has an account in the MCData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCData message store.

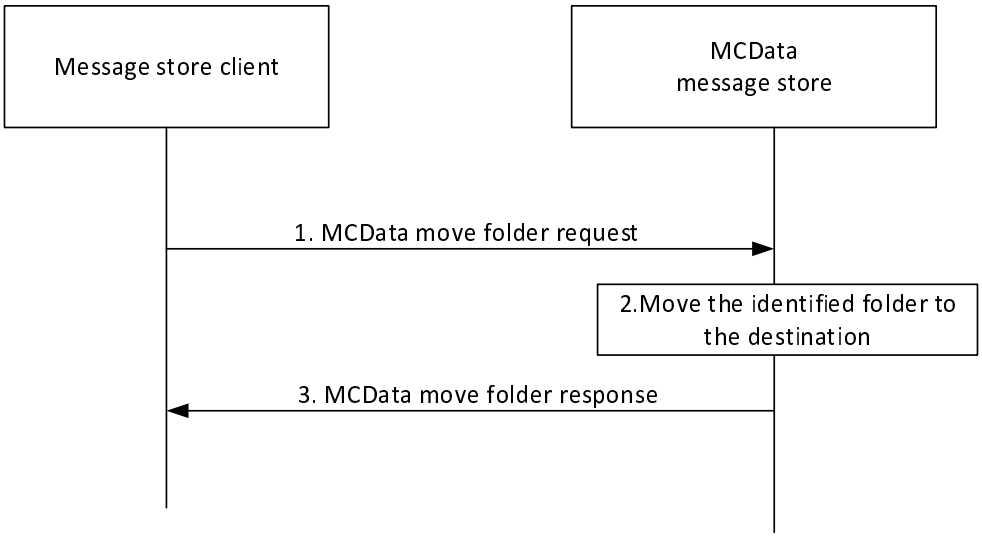

Figure 7.13.3.14.2-1: Move a user folder

1. The MCData user would like to move an existing folder in his user account in the MCData message store to a new location, the message store client initiates a MCData move folder request toward the MCData message store. The folder identifiers of the source and destination folders and the new folder name are included in the request.

2. The MCData message store move the source folder to the destination with the new folder name. If no new folder name is provided in the request, the source folder name will be used. All the child folders and objects stored in this folder are also moved to the new folder.

3. The MCData message store returns the result in the MCData move folder response. The identifier of the new folder is returned in the response.

7.13.3.15 Folder list operation

7.13.3.15.1 General

A user can view the folder structure in his user account in the MCData message store. The target folder hierarchy structure will be presented to the user; i.e. the folder and all its child folders. This operation is only meaningful when the user account in the MCData message store is structured in the folder hierarchy.

7.13.3.15.2 Procedure

The procedure in figure 7.13.3.15.2-1 describes the case when a MCData user lists an existing folder's hierarchy structure in the MCData message store.

Pre-conditions:

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

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

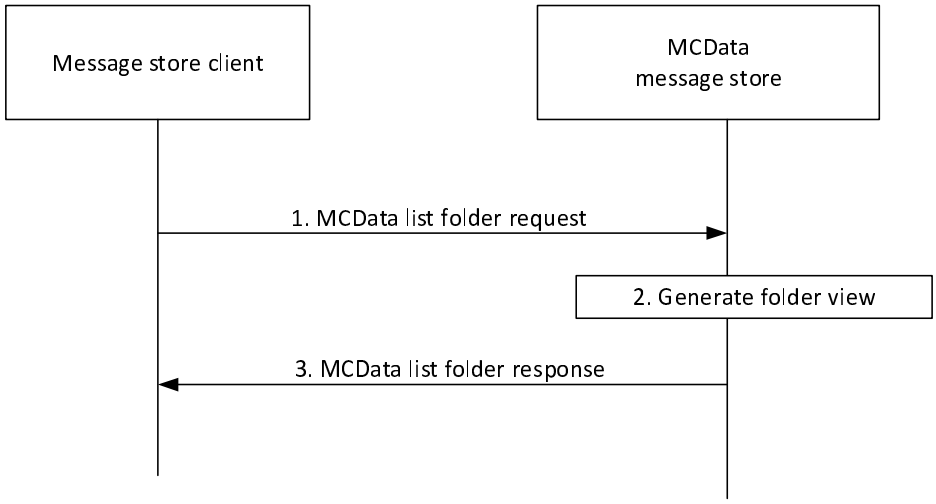

Figure 7.13.3.15.2-1: Folder list operation

1. The MCData user would like to view the folder strcture of a targeted folder in his user account in the MCData message store, the message store client initiates a MCData list folder request toward the MCData message store. The folder identifier of the target folder is included in the request.
2. The MCData message store retrieves the target folder and all its child folders. If no target folder name is provided in the request, the MCData message store will use the root folder as the target folder.
3. The MCData message store returns the result in the MCData list folder response.

7.13.3.16 Upload objects

7.13.3.16.1 General

A MCData user, with an account in the MCData message store, involved in an off-network communication will store the communication as objects in a specific folder in the local message store on his UE. These objects can be uploaded to his user account in the MCData message store once he is connected to the network with MC data service again.

7.13.3.16.2 Procedure

The procedure in figure 7.13.3.16.2-1 describes the case when a message store client uploads new objects in its local message store to the MCData message store for a MCData user.

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.

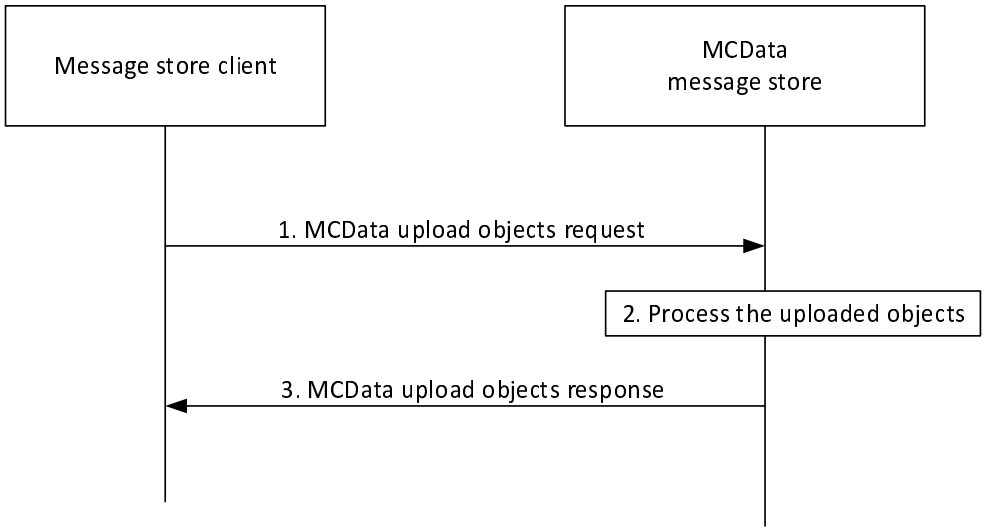

Figure 7.13.3.16.2-1: Upload objects

1. The message store client would like to upload new objecs in its local message store to the MCData message store. It initiates the MCData upload objects request toward the MCData message store. The uploaded objects and the target folder identifier where the objects will be stored are included in the request.
2. The MCData message store stores the uploaded objects to the target folder. If the target folder doesn't exist, the MCData message store will create it.
3. The MCData message store returns the result in the MCData upload objects response.

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.

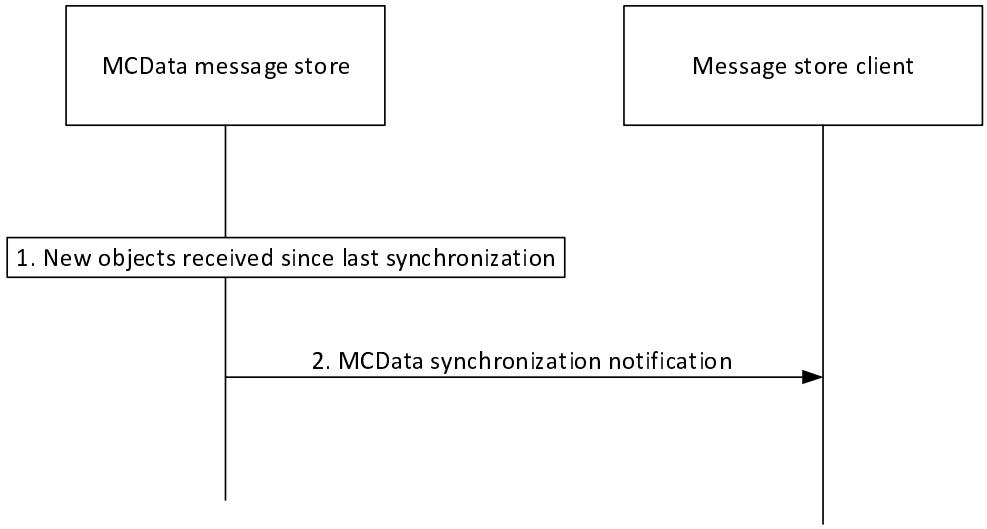

Figure 7.13.3.17.2-1: Notify client to synchronize using in-band connection

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 MCData 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 where to send notification messages and the other one to use by the service client to PULL notification messages from the MCData 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 MCData notification server and the MCData message store has been established.
5. The MCData notification server has a trust relationship and connection with the PUSH Enabler server.

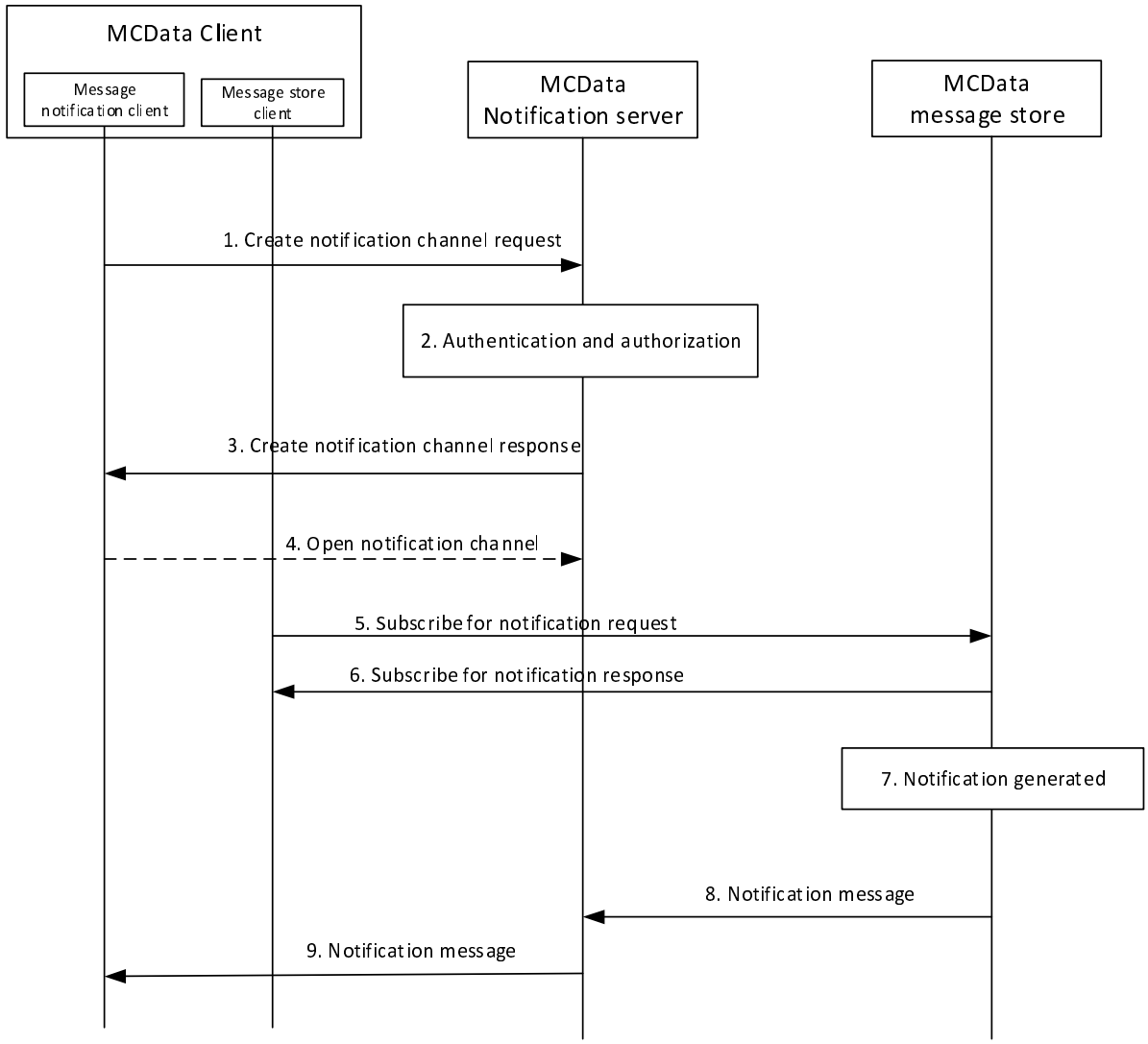

Figure 7.13.3.17.3-1: Notify client to synchronize through MCData notification server

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 duration 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 duration 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. For certain PUSH method notification type (such as WebSockets) the message notification client requests the MCData notification server to start the PUSH notification service with its specific protocol that is outside the scope of this specification.

5. The message store client sends the Subscribe 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 Subscribe for notification response to the message store 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.

The procedure in figure 7.13.3.17.3-2 describes how the message notification client updates the validity duration of a notification channel and subscription to avoid its expiration, i.e. to extend its lifetime.

Pre-conditions:

1. A notification channel has already been requested and established between the message notification client and MCData notification server.

2. The message store client has a successful notification subscription with the MCData message store.

3. The validity duration of the notification channel is about to expire.

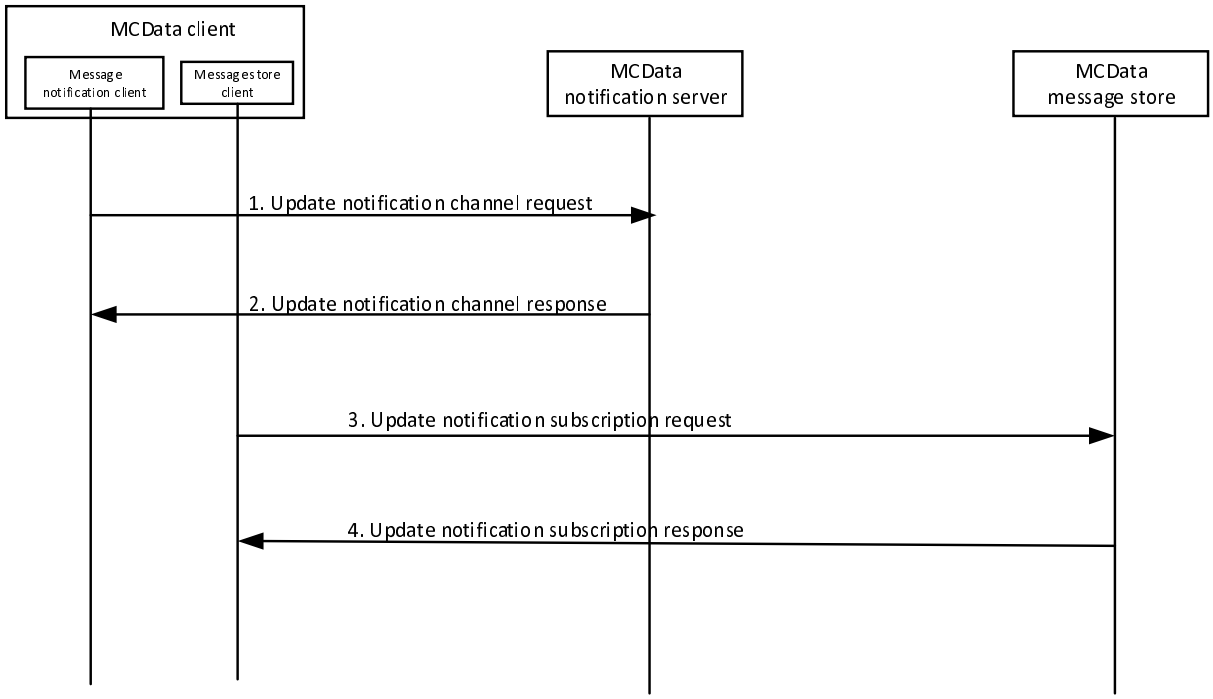

Figure 7.13.3.17.3-2: Update a notification channel

1. The message notification client sends the Update notification channel request, including the desired new validity duration, to the MCData notification server.

2. The MCData notification server grants the request and sends the Update notification channel response to the message notification client. The new validity duration is included in the response.

3. The message store client sends the Update notification subscription request to the MCData message store with the new validity duration received from the MCData notification server in step 2.

4. The MCData message store sends the Update notification subscription response to the message store client and confirms the new validity duration.

The procedure in figure 7.13.3.17.3-3 describes how the message notification client delete a notification channel and subscription that is no longer needed.

Pre-conditions:

1. A notification channel has already been requested and established between the message notification client and MCData notification server.
2. The message store client has a successful notification subscription with the MCData message store.
3. The MCData user no longer wants to receive notifications from the MCData message store.

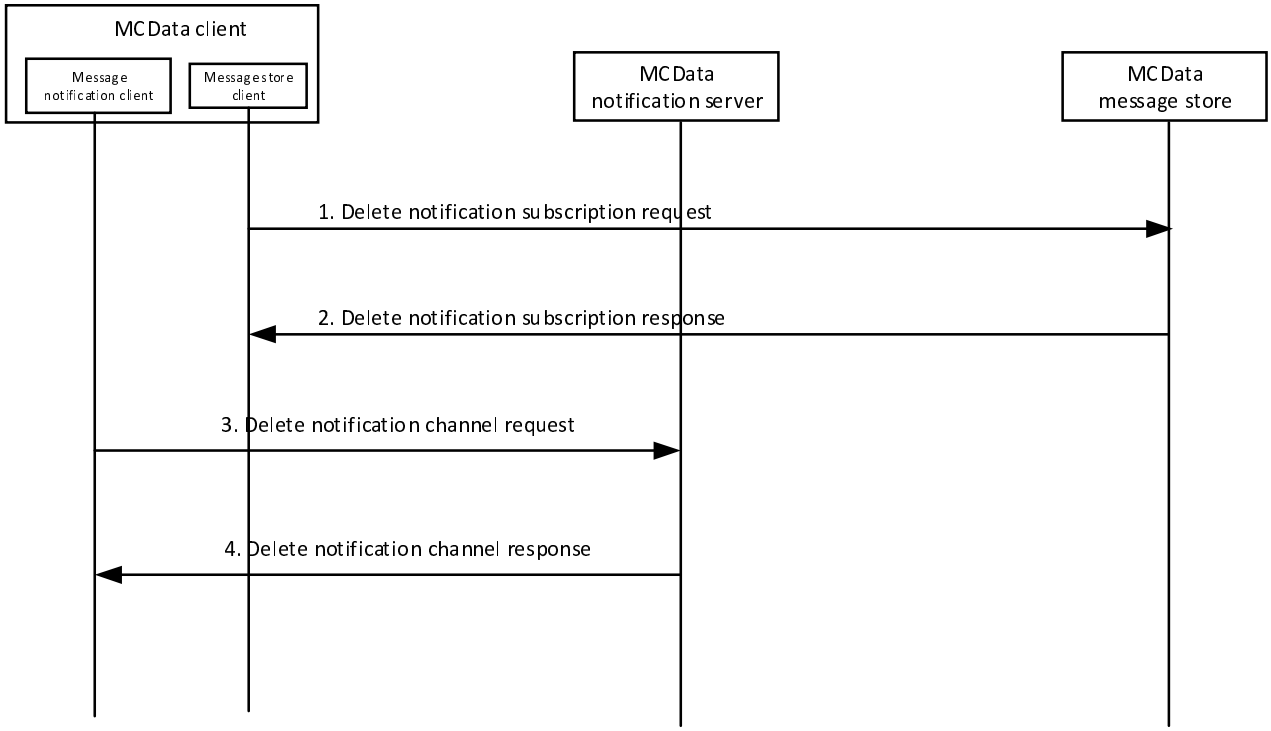

Figure 7.13.3.17.3-3: Delete a notification channel

1. The message store client decides to stop receiving notifications from the MCData message store and sends the Delete notification subscription request to the MCData message store.
2. The MCData message store acknowledges the request and sends the Delete notification subscription response to the message store client.
3. The message notification client sends the Delete notification channel request to the MCData notification server.
4. The MCData notification server acknowledges the request and sends the Delete notification channel response to the message notification client.

7.13.3.18 Search folder

7.13.3.18.1 General

The message store client can search stored folder(s) with certain criteria. This procedure allows the message store client to look for folder(s) that meet certain criteria such as when the folder is created. This procedure provides the message store client the ability to locate a specific folder(s) matching the search criteria to perform further operations.

7.13.3.18.2 Procedure

The procedure in figure 7.13.3.18.2-1 describes the case when a message store client searches and retrieves relevant stored objects from the MCData message store.

Pre-conditions:

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

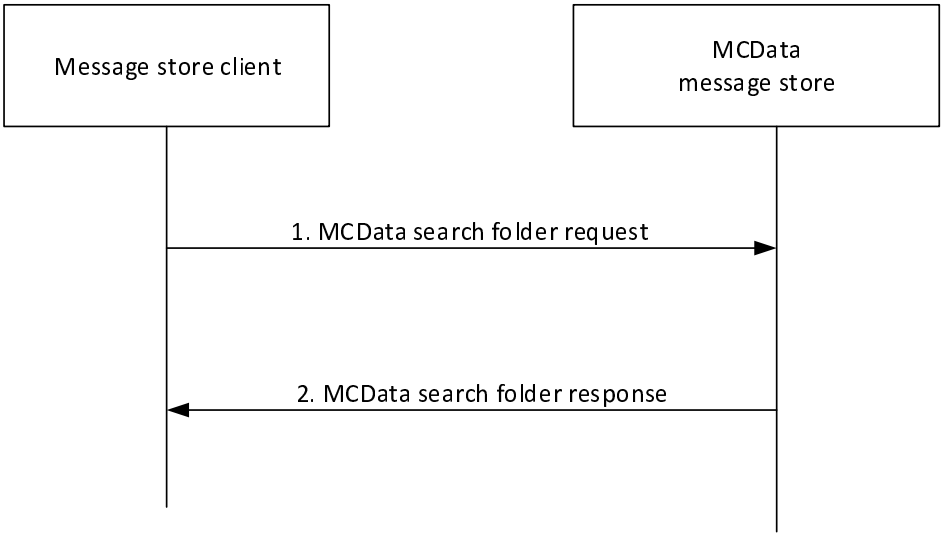

Figure 7.13.3.18.2-1: Search folder

1. The message store client wants to retrieve message store folder(s) that meet certain criteria (such as when the folder(s) was created, certain keywords etc.) and initiates a MCData search folder request toward the MCData message store. The search criteria are included in the request.
2. The MCData message store identifies all folders that match the search criteria and returns them in the MCData search folder response.

7.13.3.19 Retrieve folder content

7.13.3.19.1 General

An MCData user can retrieve the content of a folder in the user's message store account. This procedure allows the message store client to retrieve the specific folder's content from the MCData message store.

7.13.3.19.2 Procedure

The procedure in figure 7.13.3.19.2-1 describes the case when a message store client retrieves the content of a specific folder in the MCData message store.

Pre-conditions:

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

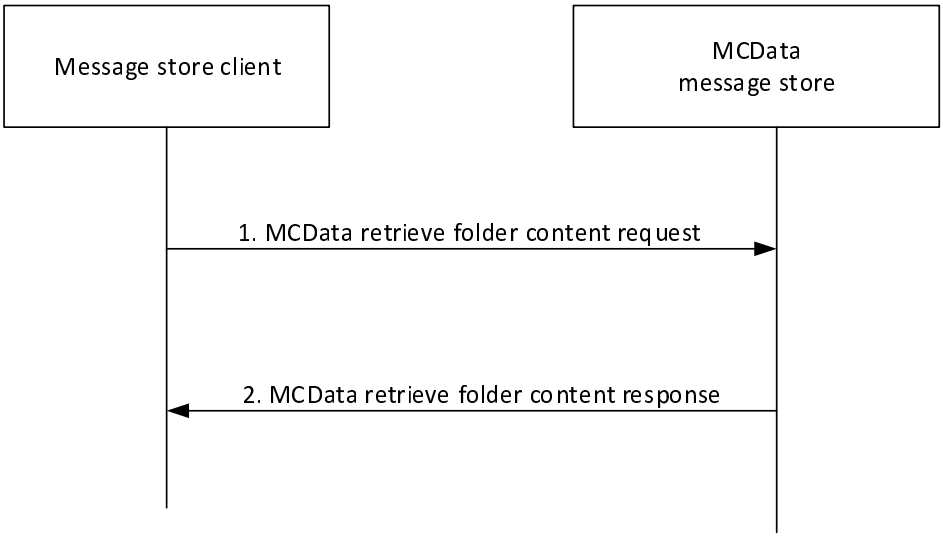

Figure 7.13.3.19.2-1: retrieve folder content

1. The message store client wants to retrieve the content of a specific folder and initiates a MCData retrieve folder content request toward the MCData message store. The requested folder identifier is included in the request.
2. The MCData message store locates the requested folder and returns the content of the folder (e.g. objects and subfolders) in the MCData retrieve folder content response.

7.13.3.20 Store file contents distributed using HTTP

7.13.3.20.1 General

An MCData user can store the received file content in his message store account. This procedure allows the message store client to request the MCData message store to retrieve the file from the media storage function of MCData content server and store into MCData message store account of the user.

7.13.3.20.2 Procedure for storing the file – receiver side

The procedure in figure 7.13.3.20.3-1 describes the case when a message store client requests the MCData message store to retrieve the file from media storage function of MCData content server and store into MCData message store account of the user.

Pre-conditions:

1. A successful authentication and authorization have been performed between the message store client and the MCData message store.
2. The configuration to store the MCData communication in MCData message store is enabled for the MCData user.
3. MCData user has requested to store his MCData communication.
4. The message store client knows the object identifier of the stored object.

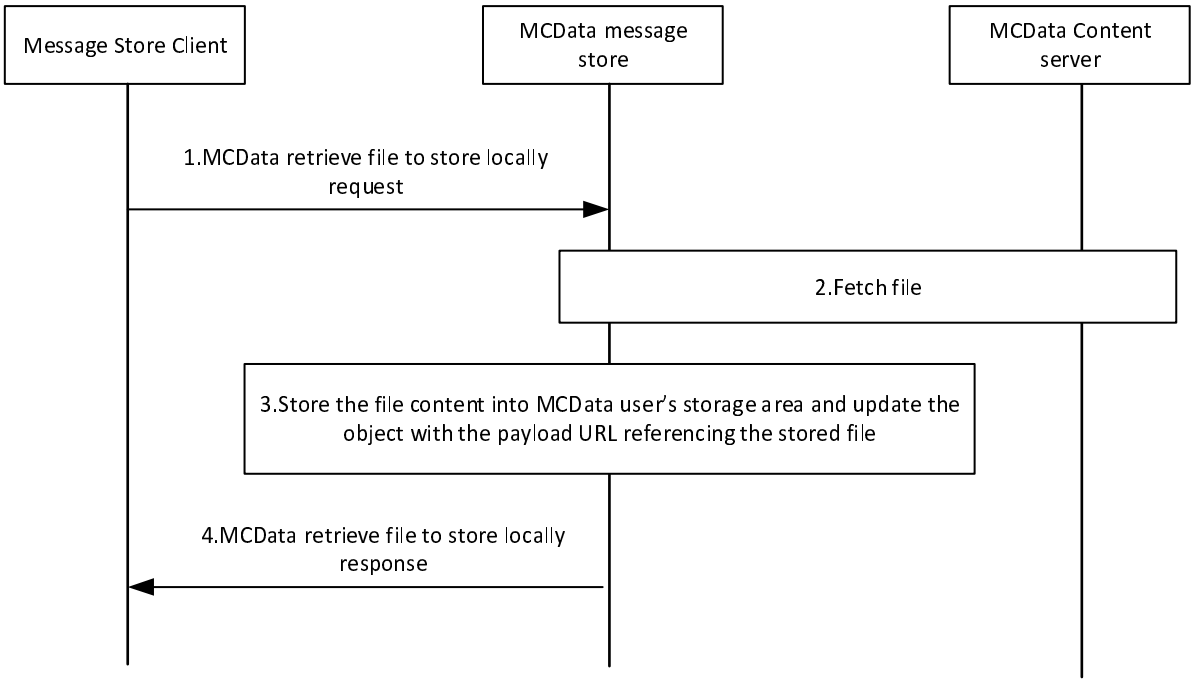

Figure 7.13.3.20.3-1: store file contents distributed using HTTP – receiver side

1. The Message store client initiates MCData retrieve file to store locally request towards the MCData message store. The object identifier corresponding to the stored MCData FD communication is included in the request.
2. The MCData message store retrieves the file URL from the stored object and fetches the file content from the MCData content server.
3. The MCData message store stores the file content into the MCData user's storage area and update the object with the URL referencing the file content stored in the MCData user's storage area.
4. The MCData message store provides the MCData retrieve file to store locally response to the message store client. This response includes the URL of the file being stored in the MCData user's storage area.

7.13.4 Generic outgoing SDS procedure with MCData message store

7.13.4.1 General

When a MCData user is supported with MCData message store all his outgoing communications shall be stored in his account in the MCData message store when he has requested. This generic SDS procedure applies to all procedures in subclause 7.4.2 when the MCData user requests to store the MCData communication.

7.13.4.2 Procedure

The procedure in figure 7.13.4.2-1 describes the generic SDS service where MCData message store is supported.

Pre-conditions:

1. MCData user has an account created with MCData message store.
2. The configuration to store the MCData communication in MCData message store is enabled for the MCData user.
3. MCData user has requested to store his MCData communication.

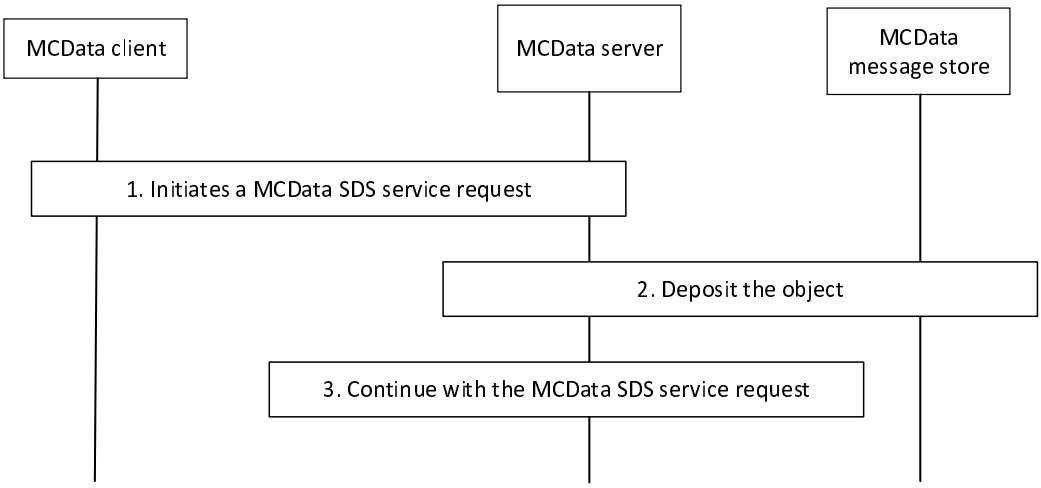

Figure 7.13.4.2-1 Generic outgoing SDS procedure with MCData message store

1. MCData client initiates an MCData SDS service request; this service request can be a private or group communication.
2. MCData server stores the communication as an object to the MCData user account in the MCData message store.
3. MCData server checks and authorizes the service request and continue the service request toward the targeted recipient(s) as described in subclause 7.4.2.

7.13.5 Generic incoming SDS procedure with MCData message store

7.13.5.1 General

When a MCData user is supported with MCData message store all his incoming communications shall be stored in his account in the MCData message store when he has requested. This generic SDS procedure applies to all prcedures in subclause 7.4.2 when the MCData user requests to store the MCData communication.

7.13.5.2 Procedure

The procedure in figure 7.13.5.2-1 describes the generic SDS service where MCData message store is supported.

Pre-conditions:

1. MCData user has an account created with MCData message store.
3. The configuration to store the MCData communication in MCData message store is enabled for the MCData user.
3. MCData user has requested to store his MCData communication.

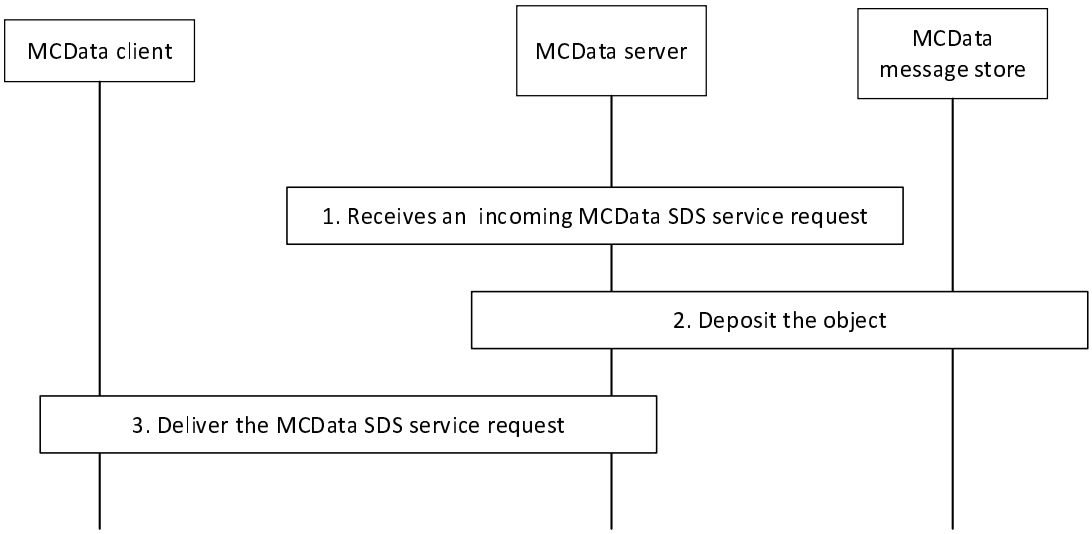

Figure 7.13.5.2-1 Generic incoming SDS procedure with MCData message store

1. The MCData server receives an incoming MCData SDS service request for the MCData user. This service request can be a response to an earlier service request sent by the MCData user or a new service request coming from any sender.
2. MCData server stores the communication as an object to the MCData user account in the MCData message store.
3. MCData server delivers the service request to MCData user as described in subclause 7.4.2.

7.13.6 Interconnection and migration with MCData message store

7.13.6.1 Interconnection

There is no interconnection of MCData message stores, as there are no defined reference points providing connection between message stores in different MCData systems.

7.13.6.2 Migration

A migrated MCData user may be provided with access to a local message store by the partner MCData system of the migrated MCData user. The MCData user is identified by the MCData ID used in the partner MCData system by that migrated MCData user in order to access the message store. There is no connection between this message store in the partner MCData system of the migrated MCData user and any message store that the MCData user has access to in the primary MCData system of that MCData user, and therefore access to a message store in the partner MCData system does not provide a means of accessing stored content in the primary MCData system of the migrated MCData user.

A migrated MCData user may be provided with a means of access to the message store in the primary MCData system of that MCData user, e.g. by providing the MCData user with a suitable APN and appropriate IP routing, or by use of the MCData IP connectivity service. Such access is outside the scope of the present document.

7.14 IP connectivity

7.14.1 General

IP data shall be exchanged between two or more data hosts. The MCData client as the link between data host and MC service system enables the exchange of IP Data. For addressing the corresponding MCData users either MCData ID or the functional alias can be used independently of each other. The MCData server provides the mechanisms to establish the association between MCData ID and corresponding functional alias.

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 subclause 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. If the MCData server detects that the functional alias used as the target of the MCData FD request is simultaneously active for multiple MCData users, then the MCData server can proceed by selecting an appropriate MCData ID based on some selection criteria. The selection of an appropriate MCData ID is left to implementation. These selection criteria can include rejection of the IP connectivity request, if no suitable MCData ID is selected.

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.

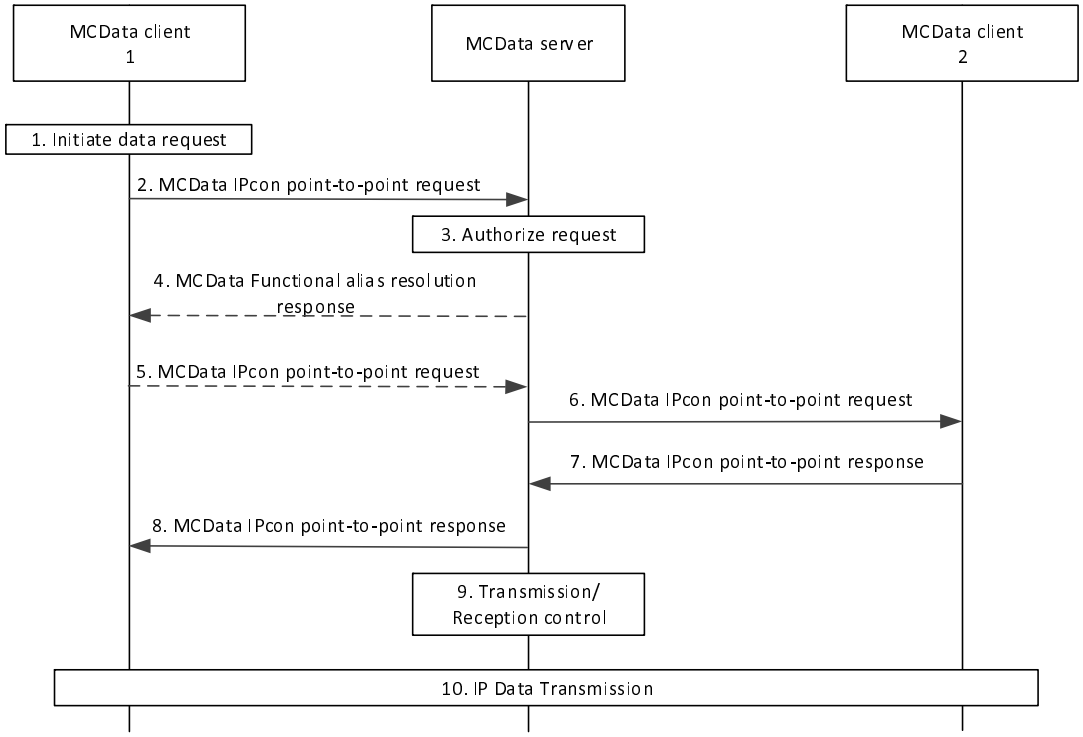

Figure 7.14.2.2.2-1: Establishment of a point-to-point IP connectivity

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 functional alias to the corresponding MCData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6.

4. The MCData server responds back to MCData client 1 with a functional alias resolution response message that contains the resolved MCData ID.

5. If the MCData server replies with a MCData functional alias resolution response message, the MCData client 1 sends a new IP connectivity point-to-point request towards the resolved MCData ID.

6. 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.

7. 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.

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

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

10. 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.

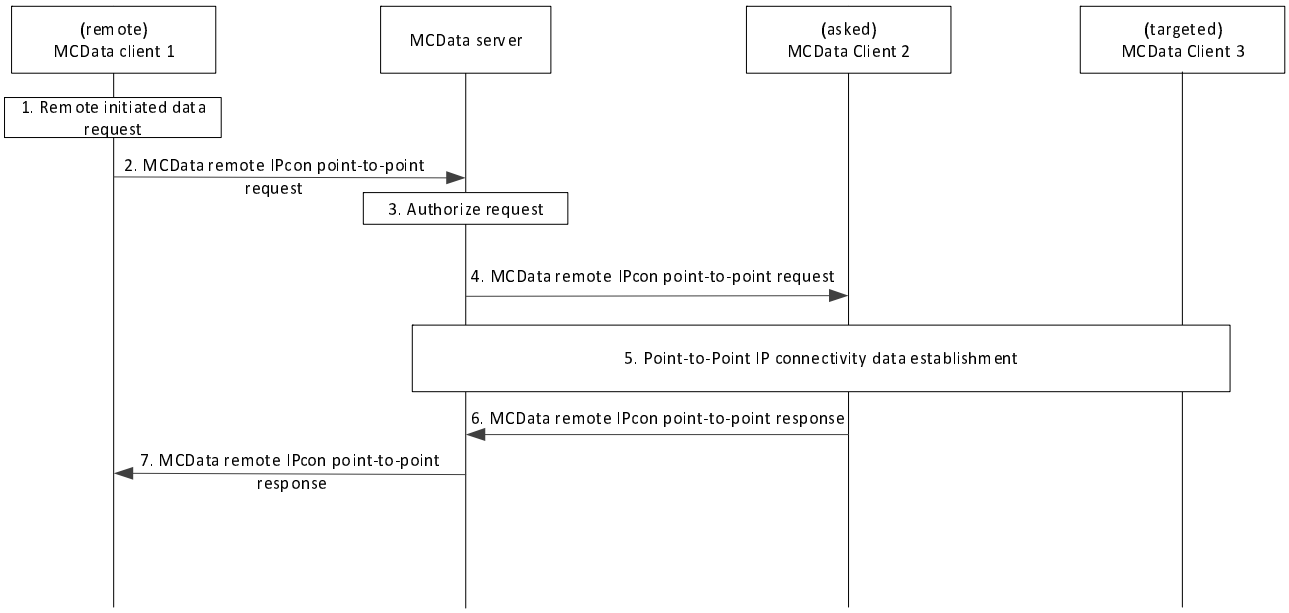

Figure 7.14.2.3.2-1: Establishment of a remote point-to-point IP connectivity

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 an 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 an 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 client 1 may have activated a functional alias to be used.
- MCData client 1 is authorized to tear down point-to-point IP connectivity sessions.

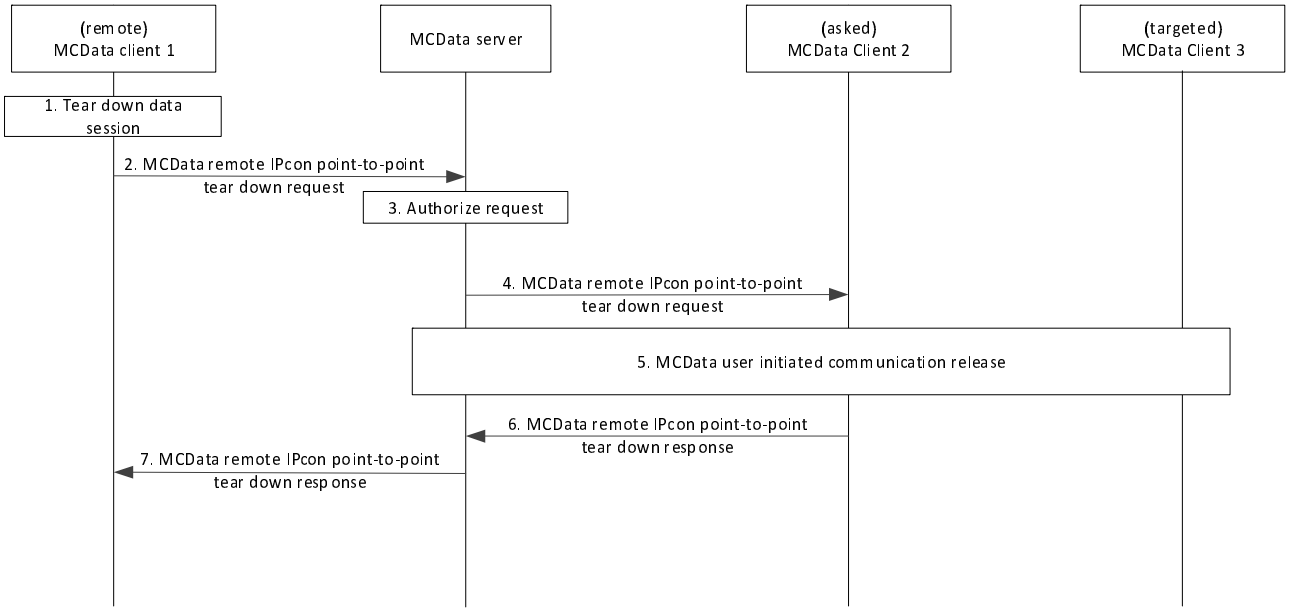

Figure 7.14.2.4.2-1: Remote initiated tear down of a point-to-point IP connectivity

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 an 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 client 1 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.

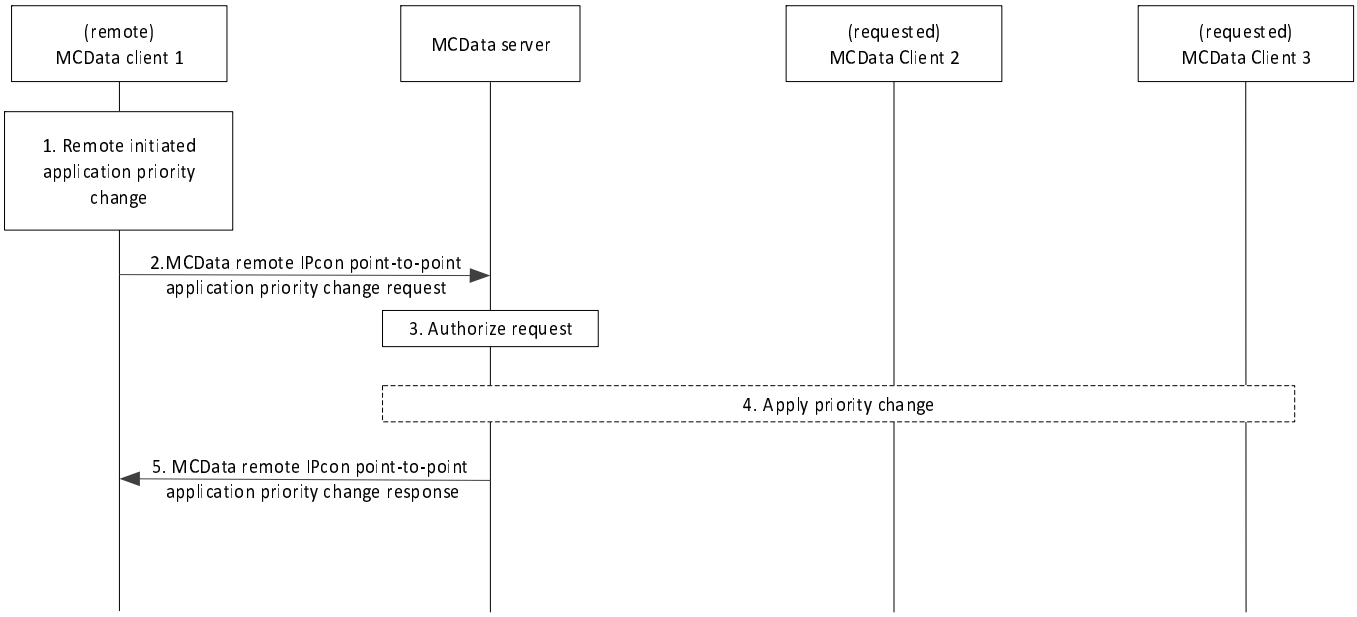

Figure 7.14.2.5.2-1: Point-to-point IP connectivity application priority change request by a remote MCData client

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 subclause 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 an 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.

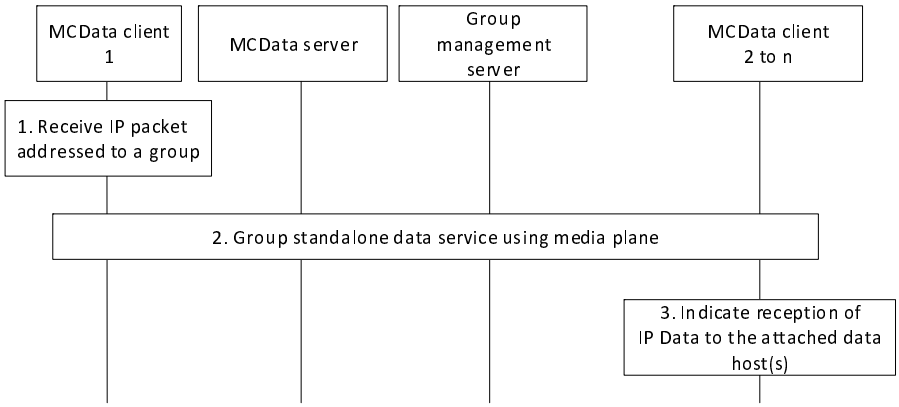

Figure 7.14.2.6.2-1: Establishment of IPcon group standalone communication session

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

7.15 Location information (on-network)

The MCData system makes use of all of the procedures for location management as specified in 3GPP TS 23.280 [5], utilising the CSC-14 reference point between the location management client and location management server and the CSC-15 reference point between the MCData server and location management server.

- The MC service client is the MCData client;
- The MC service server is the MCData server;
- The MC service group is the MCData group;
- The MC service ID is the MCData ID; and
- The MC service group ID is the MCData group ID.

7.16 Use of ProSe capabilities in off-network MCData communications

7.16.1 General

When an MCData user using a ProSe-enabled UE wants to communicate with a specific MCData group or MCData user using ProSe capabilities, the MCData client enables the use of the ProSe layer procedures for public safety, as specified in 3GPP TS 23.303 [7].

For an off-network MCData group communication, the MCData client obtains configuration data such as the user info ID of the MCData user sending data and the ProSe Group IP multicast address and ProSe Layer-2 Group ID associated to the target MCData group (as described in clause 8.1.3.2 in 3GPP TS 23.280 [5]), and provides it to the ProSe layer. The ProSe Layer-2 Group ID of the target MCData group may be used by the ProSe layer as the target group info and the discovery group ID (defined in 3GPP TS 23.303 [7]).

Prior to initiating an off-network MCData group communication, a group member discovery procedure may be initiated to identify whether other members of the target MCData group are in the proximity of the MCData user sending data, as described in the ProSe direct discovery for public safety use procedure in 3GPP TS 23.303 [7]. The off-network MCData group communication using the ProSe capability is based on the one-to-many ProSe direct communication procedure for public safety use described in 3GPP TS 23.303 [7].

For an off-network one-to-one MCData communication, the MCData client obtains configuration data such as the ProSe discovery group ID and user info ID of the target MCData user from the "List of MCData users this MCData user is authorized to initiate a one to-one communication" in the MCData user profile and requests the IP address of the MCData UE associated with the target MCData user from the ProSe layer.

The MCData client enables the ProSe layer to determine the IP address for the communication with the target MCData UE by providing the ProSe discovery group ID and user info ID (as defined in 3GPP TS 23.303 [7]) associated to the target MCData user. This may trigger the ProSe direct discovery for public safety use procedure to identify whether the target MCData user is in the proximity of the MCData user sending data. The user info ID of the target MCData user is used by the ProSe layer as the target info (as defined in 3GPP TS 23.303 [7]).

The ProSe layer can then provide the IP address related to the target MCData user to the MCData client to initiate the off-network one-to-one MCData communication based on the one-to-one ProSe direct communication procedure described in 3GPP TS 23.303 [7].

7.16.2 Procedures

The off-network MCData communication procedures using the ProSe capabilities are described within the corresponding clauses of each MCData capability, e.g. SDS procedures for off-network are described in clause 7.4.3 and file distribution procedures for off-network are described in clause 7.5.3.

Annex A (normative): MCData related configuration data

A.1 General

This Annex provides information about the static data needed for configuration for the MCData service, which belongs to one of the following categories:

- MCData UE configuration data (see subclause A.2);
- MCData user profile configuration data (see subclause A.3);
- MCData related group configuration data (see subclause A.4); and
- MCData service configuration data (see subclause A.5).

For each configuration category, data is split between configuration data that is applicable to both on network and off network, configuration data that is applicable to on-network only, and configuration data that is applicable to off-network only. The configuration data in each configuration category corresponds to a single instance of the category type i.e. the MCData UE, MCData group, MCData user and MCData service configuration data refers to the information that will be stored against each MCData UE, MCData group, MCData user and MCData service. This means that the three separate tables (on-network and off-network, on-network only, off-network only) for each configuration category represent the complete set of data for each configuration data category element.

The columns in the tables have the following meanings:

- Reference: the reference of the corresponding requirement in 3GPP TS 22.282 [3] or 3GPP TS 22.280 [2] or the corresponding subclause from either the present document or the referenced document.
- Parameter description: A short definition of the semantics of the corresponding item of data, including denotation of the level of the parameter in the configuration hierarchy.
    - When it is not clear to which functional entities the parameter is configured, then one or more columns indicating this are provided where the following nomenclature is used:
    - "Y" to denote "Yes" i.e. the parameter denoted for the row needs to be configured to the functional entity denoted for the column.
    - "N" to denote "No" i.e. the parameter denoted for the row does not need to be configured to the functional entity denoted for the column.

Parameters within a set of configuration data have a level within a hierarchy that pertains only to that configuration data. The hierarchy of the configuration data is common across all three tables of on-network and off-network, on network only and off network only. The level of a parameter within the hierarchy of the configuration data is denoted by use of the character ">" in the parameter description field within each table, one per level. Parameters that are at the top most level within the hierarchy have no ">" character. Parameters that have one or more ">" characters are child parameters of the first parameter above them that has one less ">" character. Parent parameters are parameters that have one or more child parameters. Parent parameters act solely as a "grouping" of their child parameters and therefore do not contain an actual value themselves i.e. they are just containers for their child parameters.

Each parameter that can be configured online shall only be configured through one online reference point. Each parameter that can be configured offline shall only be configured through one offline reference point. The most recent configuration data made available to the MCData UE shall always overwrite previous configuration data, irrespective of whether the configuration data was provided via the online or offline mechanism.

A.2 MCData UE configuration data

The general aspects of UE configuration are specified in 3GPP TS 23.280 [5]. Data in tables A.2-1 and A.2-2 have to be known by the MCData UE after MCData authorization.

Data in table A.2-1 can be configured offline using the CSC-11 reference point. Table A.2-1 contains the UE configuration required to support the use of off-network MCData service.

Table A.2-1: UE configuration data (on and off network)

Reference	Parameter description
	Short data service
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous SDS transactions (Nc4)
[R-5.4.2-004] of 3GPP TS 22.280 [2]	> Requested presentation priority of SDS messages received (see NOTE)
	File distribution
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous file distribution transactions (Nc4)
	Transmission control
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous data transmissions (Nc4)
[R-5.4.2-003] of 3GPP TS 22.280 [2]	> Maximum number of data transmissions (Nc5) in a group
	Reception control
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous data receptions (Nc4)
[R-5.4.2-003] of 3GPP TS 22.280 [2]	> Maximum number of data receptions (Nc5) in a group
NOTE: Priority of SDS messages includes enhanced status updates, since enhanced status updates utilise the SDS mechanism.	

Table A.2-2: UE configuration data (on network)

Reference	Parameter description
Subclause 5.2.3 of 3GPP TS 23.280 [6]	Relay service (Y/N)
Subclause 5.2.3 of 3GPP TS 23.280 [6]	List of allowed relayed MCData groups and their relay service code (as specified in 3GPP TS 23.303 [7]) (optional) (see NOTE)
	> MCData group ID
	> Relay service code (as specified in 3GPP TS 23.303 [7])
NOTE: When the value of the parameter Relay service is N, this parameter and its child parameters are not needed.	

A.3 MCData user profile configuration data

The general aspects of MC service user profile configuration data are specified in 3GPP TS 23.280 [5]. The MCData user profile configuration data is stored in the MCData user database. The MCData server obtains the MCData user profile configuration data from the MCData user database (MCData-2).

Tables A.3-1 and A.3-2 contain the MCData user profile configuration required to support the use of on-network MCData service. Tables A.3-1 and A.3-3 contain the MCData user profile configuration required to support the use of off-network MCData service. Data in table A.3-1 and A.3-3 can be configured offline using the CSC-11 reference point.

Table A.3-1: MCData user profile configuration data (on and off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server	MCData user database
Subclause 8.1.2 of 3GPP TS 23.280 [5]	MCData identity (MCData ID)	Y	Y	Y	Y
3GPP TS 33.180 [13]	KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
Subclause 5.2.4 of 3GPP TS 23.280 [5]	Pre-selected MCData user profile indication (see NOTE 2)	Y	Y	Y	Y
Subclause 5.2.4 of 3GPP TS 23.280 [5]	MCData user profile index	Y	Y	Y	Y
Subclause 5.2.4 of 3GPP TS 23.280 [5]	MCData user profile name	Y	Y	Y	Y
[R-5.17-007], [R-6.13.4-002] of 3GPP TS 22.280 [2]	User profile status (enabled/disabled)		Y	Y	Y
[R-5.7-001], [R-6.9-003] of 3GPP TS 22.280 [2]	Authorised to create and delete aliases of an MCData user and its associated user profiles.			Y	Y
[R-5.7-002], [R-6.9-003] of 3GPP TS 22.280 [2]	Alphanumeric aliases of user	Y	Y	Y	Y
[R-5.1.1-005], [R-5.9-001] of 3GPP TS 22.280 [2]	Participant type of the user	Y	Y	Y	Y
[R-5.1.8-006], [R-5.3-002], [R-5.9-001], [R-5.16.2-001], [R-5.16.2-002] of 3GPP TS 22.280 [2]	User's Mission Critical Organization (i.e. which organization a user belongs to)	Y	Y	Y	Y
[R-5.2.2-003] of 3GPP TS 22.280 [2]	Authorisation to create a group-broadcast group			Y	Y
[R-5.2.2-003] of 3GPP TS 22.280 [2]	Authorisation to create a user-broadcast group			Y	Y
[R-5.6.2.4.1-002] of 3GPP TS 22.280 [2]	Authorised to activate MCData emergency alert	Y	Y	Y	Y
[R-5.6.2.4.1-013] of 3GPP TS 22.280 [17]	Automatically trigger a MCData emergency communication after initiating the MCData emergency alert	Y	Y	Y	Y
[R-5.6.2.4.1-004] [R-5.6.2.4.1-008] [R-5.6.2.4.1-012] of 3GPP TS 22.280 [2]	Group used on initiation of an MCData emergency group communication (see NOTE 3)				
[R-5.6.2.4.1-004], [R-5.6.2.4.1-008], [R-5.6.2.4.1-012] of 3GPP TS 22.280 [17]	Recipient for an MCData emergency private communication (see NOTE 3)				
	> MCData ID	Y	Y	Y	Y
3GPP TS 33.180 [19]	> KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
[R-5.6.2.4.2-002] of 3GPP TS 22.280 [2]	Authorisation to cancel an MCData emergency alert	Y	Y	Y	Y
[R-6.1.1.2-005], [R-6.1.1.2-006], [R-6.1.1.2-007] of 3GPP TS 22.282 [3]	Individual conversation hang time	Y	Y	Y	Y

	One-to-one communication				
[R-6.3.1.2-007] of 3GPP TS 22.282 [3] and 3GPP TS 33.180 [13]	> List of MCData users this MCData user is authorized to initiate a one-to-one communication				
	>> MCData ID	Y	N	Y	Y
	>> Discovery Group ID	Y	N	Y	Y
	>> User info ID (as specified in 3GPP TS 23.303 [7])	Y	N	Y	Y
	>> KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
[R-6.7.3-007] of 3GPP TS 22.280 [2]	Authorised to make one-to-one communications towards users not included in "list of MCData user(s) this MCData user is authorized to initiate a one-to-one communication"	Y	Y	Y	Y
	File distribution				
[R-5.3.2-010] of 3GPP TS 22.282 [3] and 3GPP TS 33.180 [13]	> List of MCData users this MCData user is allowed to cancel distribution of files being sent or waiting to be sent				
	>> MCData ID	Y	Y	Y	Y
	>> KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
	Transmission and reception control				
[R-6.2.2.1-001] of 3GPP TS 22.282 [3]	> Whether the MCData user is permitted to transmit data	Y	Y	Y	Y
[R-6.2.3-005] of 3GPP TS 22.282 [3]	> Maximum amount of data that the MCData user can transmit in a single request during one-to-one communication	Y	Y	Y	Y
[R-6.2.3-005] and [R-6.3.1.2-008] of 3GPP TS 22.282 [3]	> Maximum amount of time that the MCData user can transmit in a single request during one-to-one communication	Y	Y	Y	Y
[R-6.2.3-001] of 3GPP TS 22.282 [3]	> List of MCData users this MCData user is allowed to request the release of an ongoing transmission that this MCData user is participating in				
	>> MCData ID	Y	Y	Y	Y
[R-5.1.7-002] and [R-6.8.7.2-007] and [R-6.8.7.2-008] of 3GPP TS 22.280 [2]	Priority of the user (see NOTE 4)		Y	Y	Y
	Lossless communication for private communication	Y	Y	Y	Y
	Store communication in Message Store (see NOTE 5)	Y	Y	Y	Y
	Store private communication in Message Store (see NOTE 6)	Y	Y	Y	Y

NOTE 1: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5].
NOTE 2: As specified in 3GPP TS 23.280 [5], for each MCData user's set of MCData user profiles, only one MCData user profile shall be indicated as being the pre-selected MCData user profile.
NOTE 3: This parameter is used for the emergency communication and also used as a target of the emergency alert request. At most one of them is configured; i.e. emergency communication will go to either a group or a user. If both are not configured the MCData user's currently selected group will be used.
NOTE 4: The use of the parameter is left to implementation.
NOTE 5: This is the top-level control parameter to determine whether MCData communications will be stored or not. When this parameter is set; the second level control parameter is used to determine whether a specific MCData communication (private or which group) will be stored and MCData user can request for all or selected of his/her MCData communication shall be stored in the MCData message store or not.
NOTE 6: This is the second level control parameter to determine whether a private communication will be stored when the Store communication in Message Store top level control parameter is set.

Table A.3-2: MCData user profile configuration data (on network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server	MCData user database
[R-5.1.5-001], [R-5.1.5-002], [R-5.10-001], [R-6.4.7-002], [R-6.8.1-008], [R-6.7.4-002] of 3GPP TS 22.280 [2]	List of on-network MCData groups for use by an MCData user				
	> MCData Group ID	Y	Y	Y	Y
	> Store group communication in Message Store (see NOTE 11)	Y	Y	Y	Y
	> Application plane server identity information of group management server where group is defined				
	>> Server URI	Y	Y	Y	Y
	> Application plane server identity information of identity management server which provides authorization for group (see NOTE 1)				
	>> Server URI	Y	Y	Y	Y
3GPP TS 33.180 [13]	> KMSUri for security domain of group (see NOTE 2)	Y	Y	Y	Y
	> Presentation priority of the group relative to other groups and users (see NOTE 3)	Y	N	Y	Y
	> Transmission and reception control				
	>> Whether MCData user is permitted to transmit data in the group	Y	Y	Y	Y
	>> Maximum amount of data that the MCData user can transmit in a single request during group communication	Y	Y	Y	Y
	>> Maximum amount of time that the MCData user can transmit in a single request during group communication	Y	Y	Y	Y
Subclause 5.2.5 of 3GPP TS 23.280 [5]	List of groups user implicitly affiliates to after MCData service authorization for the user				
	> MCData Group ID	Y	Y	Y	Y
[R-6.4.2-006] of 3GPP TS 22.280 [2]	Authorisation of an MCData user to request a list of which MCData groups a user has affiliated to		Y	Y	Y
[R-6.4.6.1-002], [R-6.4.6.1-003] of 3GPP TS 22.280 [2]	Authorisation to change affiliated groups of other specified user(s)		Y	Y	Y
[R-6.4.6.2-001], [R-6.4.6.2-002] of 3GPP TS 22.280 [2]	Authorisation to recommend to specified user(s) to affiliate to specific group(s)		Y	Y	Y
[R-6.6.1-004] of 3GPP TS 22.280 [2]	Authorisation to perform regrouping	Y	Y	Y	Y
[R-6.7.2-001] of 3GPP TS 22.280 [2]	Presence status is available/not available to other users	Y	Y	Y	Y
[R-6.7.1-002], [R-6.7.2-002] of 3GPP TS 22.280 [2]	List of MCData users that MCData user is authorised to obtain presence of				
	> MCData IDs	Y	Y	Y	Y
[R-6.8.7.4.2-001], [R-6.8.7.4.2-002] of 3GPP TS 22.280 [2]	Authorisation of a user to cancel an emergency alert on any MCData UE of any user		Y	Y	Y

[R-6.13.4-001] of 3GPP TS 22.280 [2]	Authorisation for an MCData user to enable/disable an MCData user		Y	Y	Y
[R-6.13.4-003], [R-6.13.4-005], [R-6.13.4-006], [R-6.13.4-007] of 3GPP TS 22.280 [2]	Authorisation for an MCData user to (permanently /temporarily) enable/disable a UE		Y	Y	Y
[R-7.14-002], [R-7.14-003] of 3GPP TS 22.280 [2]	Authorization for manual switch to off-network while in on-network	Y	Y	Y	Y
[R-5.1.5-004] of 3GPP TS 22.280 [2]	Limitation of number of affiliations per user (N2)	N	Y	Y	Y
[R-6.4.6.1-001], [R-6.4.6.1-004] of 3GPP TS 22.280 [2]	List of MCData users whose selected groups are authorized to be remotely changed				
	> MCData ID	Y	Y	Y	Y
[R-6.7.3-007a] of 3GPP TS 22.280 [2] and 3GPP TS 33.180 [13]	List of MCData users this MCData user is authorized to receive a one-to-one communication				
	> MCData ID	Y	Y	Y	Y
	> KMSUri for security domain of MCData ID	Y	Y	Y	Y
	Conversation management				
[R-6.1.1.2-009] of 3GPP TS 22.282 [3].	> List of MCData users to be sent message delivered disposition notifications in addition to the message sender	N	Y	Y	Y
	>> MCData ID	N	Y	Y	Y
[R-6.1.1.2-009] of 3GPP TS 22.282 [3].	> List of MCData users to be sent message read disposition notifications in addition to the message sender	N	Y	Y	Y
	>> MCData ID	N	Y	Y	Y
3GPP TS 23.283 [18]	Authorised to use LMR E2EE for interworking	Y	Y	Y	Y
3GPP TS 23.283 [18]	> List of supported LMR technology types				
3GPP TS 23.283 [18]	>> LMR technology type (P25, TETRA etc.)	Y	N	Y	Y
3GPP TS 23.283 [18]	>> URI of LMR key management functional entity (see NOTE 4)	Y	N	Y	Y
3GPP TS 23.283 [18]	>> LMR specific identity (RSI for P25 or ITSI for TETRA) (see NOTE 5)	Y	N	Y	Y
3GPP TS 23.283 [18]	>> LMR specific security information (see NOTE 5)	Y	N	Y	Y
	List of servers used in the private and group communications				
	> MCData content server where the HTTP FD file is uploaded				
	>> Server URI	Y	Y	Y	Y
	> MCData message store where the communication history stores				
	>> Server URI	Y	Y	Y	Y
Subclause 5.2.9 of 3GPP TS 23.280 [16]	List of partner MCData systems in which this profile is valid for use during migration				
Subclause 5.2.9 of 3GPP TS 23.280 [16]	> Identity of partner MCData system	Y	Y	Y	Y
Subclause 10.1.1 of 3GPP TS 23.280 [16]	> Access information for partner MCData system (see NOTE 6)	Y		Y	Y

[R-5.9a-012] of 3GPP TS 22.280 [2] [R-5.9a-013] of 3GPP TS 22.280 [2]	Authorised to request information query of the association between active functional alias(es) and the MCData ID(s)		Y	Y	Y
[R-6.6.4.2-002a] and [R-6.6.4.2-002b] of 3GPP TS 22.280 [2]	List of groups the client affiliates/de-affiliates when criteria is met				
	> MCData Group ID	Y	Y	Y	Y
	>> Criteria for affiliation (see NOTE 7)	Y	Y	Y	Y
	>> Criteria for de-affiliation (see NOTE 7)	Y	Y	Y	Y
	>> Manual de-affiliation is not allowed if criteria for affiliation are met	Y	Y	Y	Y
[R-6.6.4.2-002] of 3GPP TS 22.280 [2]	List of groups the client affiliates after receiving an emergency alert				
	> MCData Group ID	Y	Y	Y	Y
	>> Manual de-affiliation is not allowed if criteria for affiliation are met	Y	Y	Y	Y
	List of functional alias(es) of the MCData user				
[R-5.9a-005] of 3GPP TS 22.280 [2]	> Functional alias	Y	Y	Y	Y
[R-5.9a-018] of 3GPP TS 22.280 [2]	>> Trigger criteria for activation by the MCData server (see NOTE 8)	N	Y	Y	Y
[R-5.9a-017], [R-5.9a-018] of 3GPP TS 22.280 [2]	>> Trigger criteria for de-activation by the MCData server (see NOTE 8)	N	Y	Y	Y
[R-5.9a-019] of 3GPP TS 22.280 [2]	>> Trigger criteria for activation by the MCData client (see NOTE 8)	Y	Y	Y	Y
[R-5.9a-019] of 3GPP TS 22.280 [2]	>> Trigger criteria for de-activation by the MCData client (see NOTE 8)	Y	Y	Y	Y
	>> Manual de-activation is not allowed if the criteria are met (see NOTE 8)	Y	Y	Y	Y
[R-5.9a-012] of 3GPP TS 22.280 [2]	Authorised to take over a functional alias from another MCData user		Y	Y	Y
	Authorised to participate in an IP connectivity session	Y	Y	Y	Y
[R-5.5.2-003], [R-5.5.2-004] 3GPP TS 22.282 [3]	>List of MCData users which can be included in IP connectivity sessions.				
	>> MCData ID	Y	Y	Y	Y
3GPP TS 33.180 [13]	>> KMSUri for security domain of the MCData ID	Y	Y	Y	Y
	>>List of associated data host IP information				
	>>>IP information (see NOTE 9)	Y	Y	Y	Y
[R-5.5.2-003] 3GPP TS 22.282 [3]	Authorised to initiate remote point-to-point IP connectivity sessions	N	Y	Y	Y
	>List of MCData users which can be addressed in a remote initiated IP connectivity session;				
	>> MCData ID	N	Y	Y	Y
[R-5.5.2-003] 3GPP TS 22.282 [3]	Authorised to tear down point-to-point IP connectivity sessions	N	Y	Y	Y
	>List of MCData users which can be addressed in a remote initiated IP connectivity session tear down;				
	>> MCData ID	N	Y	Y	Y

[R-5.5.2-006] 3GPP TS 22.282 [3]	Authorised to request remotely application priority modification of established point-to-point IP connectivity sessions;				
	>List of MCData users which can be addressed remotely to change the application priority of established IP connectivity sessions;	Y	Y	Y	Y
[R-5.10-001b] 3GPP TS 22.280 [2]	Maximum number of successful simultaneous MCData service authorizations for this user (see NOTE 10)	N	Y	Y	Y

NOTE 1: If this parameter is not configured, authorization to use the group shall be obtained from the identity management server identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5].
NOTE 2: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5].
NOTE 3: The use of this parameter by the MCData UE is outside the scope of the present document.
NOTE 4: The LMR key management functional entity is part of the LMR system and is outside the scope of the present document.
NOTE 5: This is an LMR specific parameter with no meaning within MC services.
NOTE 6: Access information for each partner MCData system comprises the list of information required for initial UE configuration to access an MCData system, as defined in table A.6-1 of 3GPP TS 23.280 [16]
NOTE 7: The criteria may consist conditions such as the location of the MCData user or the active functional alias of the MCData user.
NOTE 8: The criteria may consist of conditions such as MCData user location or time.
NOTE 9: IP information may contain IP addresses, corresponding subnet masks, gateway and DNS settings.
NOTE 10: If configured, this value has precedence over the system level parameter "maximum number of successful simultaneous service authorisations" in table A.5-2. If not configured, the corresponding parameter from table A.5-2 shall be used.
NOTE 11: This is the second level control parameter to determine whether this group communication will be stored in the MCData message store when the Store communication in Message Store top level control parameter is set.

Table A.3-3: MCData user profile configuration data (off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server	MCData user database
[R-7.2-003], [R-7.6-004] of 3GPP TS 22.280 [2]	List of off-network MCData groups for use by this MCData user				
	> MCData Group ID	Y	N	Y	Y
	> Store group communication in Message Store (see NOTE 4)	Y	N	Y	Y
	> Application plane server identity information of group management server where group is defined				
	>> Server URI	Y	N	Y	Y
	> Application plane server identity information of identity management server which provides authorization for group (see NOTE 1)				
	>> Server URI	Y	N	Y	Y
3GPP TS 33.180 [13]	> KMSUri for security domain of group (see NOTE 2)	Y	N	Y	Y
	> Presentation priority of the group relative to other groups and users (see NOTE 3)	Y	N	Y	Y
[R-7.12-002], [R-7.12-003] of 3GPP TS 22.280 [2]	Authorization for off-network services	Y	N	Y	Y
Subclause 7.16.1	User info ID (as specified in 3GPP TS 23.303 [7])	Y	N	Y	Y

NOTE 1: If this parameter is not configured, authorization to use the group shall be obtained from the identity management server identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of TS 23.280 [5].
NOTE 2: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5].
NOTE 3: The use of this parameter by the MCData UE is outside the scope of the present document.
NOTE 4: This is the second level control parameter to determine whether this group communication will be stored in the MCData message store when the Store communication in Message Store top level control parameter is set.

A.4 MCData related Group configuration data

The general aspects of group configuration are specified in 3GPP TS 23.280 [5].

Parameters specified in table A.4-1 are child parameters of the "MCData configuration" parameter specified in table A.4-1 in 3GPP TS 23.280 [5]. Parameters specified in table A.4-2 are child parameters of the "MCData configuration" parameter specified in table A.4-2 in 3GPP TS 23.280 [5]. Parameters specified in table A.4-3 are child parameters of the "MCData configuration" parameter specified in table A.4-3 in 3GPP TS 23.280 [5].

Table A.4-1: Group configuration data (on and off network)

Reference	Parameter description	MCData UE	MCData Server	Group management server
[R-5.12-001] of 3GPP TS 22.280 [2]	>> Media confidentiality and integrity protection (see NOTE)	Y	Y	Y
[R-5.12-001] of 3GPP TS 22.280 [2]	>> Transmission control confidentiality and integrity protection (see NOTE)	Y	Y	Y
[R-5.12-001] of 3GPP TS 22.280 [2]	>> Group media protection security material (see NOTE)	Y	N	Y
Subclause 5	>> MCData sub-services and features enabled for the group			
	>>> Short data service enabled	Y	Y	Y
	>>> File distribution enabled	Y	Y	Y
	>>> IP connectivity enabled	Y	Y	Y
	>>> Conversation management enabled	Y	Y	Y
	>>> Transmission control enabled	Y	Y	Y
	>>> Reception control enabled	Y	Y	Y
	>>> Enhanced status enabled	Y	Y	Y
	>> Enhanced status			
[R-6.1.3.2-002] of 3GPP TS 22.282 [3]	>>> List of operational status values	Y	N	Y
[R-6.1.1.2-011] of 3GPP TS 22.282 [2]	>> Lossless communication	Y	Y	Y
[R-6.1.1.2-007] of 3GPP TS 22.282 [5]	>> Conversation hang time	Y	Y	Y
NOTE: Security mechanisms are specified in 3GPP TS 33.180 [13].				

Table A.4-2: Group configuration data (on network)

Reference	Parameter description	MCData UE	MCData Server	Group management server
[R-6.4.5-001], [R-6.4.5-003] of 3GPP TS 22.280 [2]	>> Authorisation of a user to request a list of affiliated members of a group	Y	Y	Y
[R-5.1.7-002], [R-6.2.2-001], [R-6.6.2.2-006], [R-6.8.7.2-003] of 3GPP TS 22.280 [2]	>> Priority of the group	N	Y	Y
Subclause 6.2.2 of 3GPP TS 22.282 [3]	>> Transmission and reception control			
	>>> Maximum data size for SDS	Y	Y	Y
	>>> Maximum data size for FD	Y	Y	Y
	>>> Maximum data size for auto-receive	N	Y	Y
3GPP TS 23.283 [18]	>> Indication whether use of LMR E2EE is permitted on the MCData group	Y	N	Y
3GPP TS 23.283 [18]	>> LMR specific identity for MCData group (see NOTE)	Y	N	Y
3GPP TS 23.283 [18]	>> Group to key binding (see NOTE)	Y	N	Y
NOTE: This is an LMR specific parameter with no meaning within MC services.				

Table A.4-3: Group configuration data (off network)

Reference	Parameter description	MCData UE	MCData Server	Group management server
Subclause 10.10 of 3GPP TS 23.280 [5]	>> Default ProSe Per-Packet priority (as specified in 3GPP TS 23.303 [7]) values			
	>>> MCData group call signalling	Y	N	Y
	>>> MCData group call media	Y	N	Y

A.5 MCData service configuration data

The general aspects of MC service configuration are specified in 3GPP TS 23.280 [5]. The MCData service configuration data is stored in the MCData server.

Tables A.5-1 and A.5-2 describe the configuration data required to support the use of on-network MCData service. Tables A.5-1 and A.5-3 describe the configuration data required to support the use of off-network MCData service. Data in tables A.5-1 and A.5-3 can be configured offline using the CSC-11 reference point.

Table A.5-1: MCData service configuration data (on and off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server

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
[R-6.2.2.1-002d], [R-6.2.2.4-003] of 3GPP TS 22.282 [3]	> Time limit for the temporarily stored data waiting to be delivered to a receiving user	N	Y	Y
[R-6.2.2.3-001] of 3GPP TS 22.282 [3]	> Timer for periodic announcement with the list of available recently invited data group communications	N	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(s)	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.

Table A.5-3: MCData service configuration data (off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server
Subclause 10.10 of 3GPP TS 23.280 [5]	Default ProSe Per-Packet priority (as specified in 3GPP TS 23.303 [7]) values			
	> MCData one-to-one call signalling	Y	N	Y
	> MCData one-to-one call media	Y	N	Y

Annex B (informative): Transmission control for MCData

B.1 Overview of transmission control process

The MCData server may receive several simultaneous requests for data transmission, which may be associated with different types of communication e.g. group, private, 1-to-many. For each communication, how the requests are processed may be different. The requests that are not authorized shall be rejected by the transmission control function. For message requests over the signalling control plane, the processing should be immediate and is delivered to the recipients either via unicast or broadcast. However, for message requests over the media plane, transmission control arbitration (see Annex B.2) will be necessary. Subsequent to transmission control arbitration, and subject to the policy e.g. store and forward, the data is either delivered directly to the recipient MCData user or stored in the network repository and a corresponding URL is delivered. The end-to-end transmission control process is illustrated in figure B.1-1.

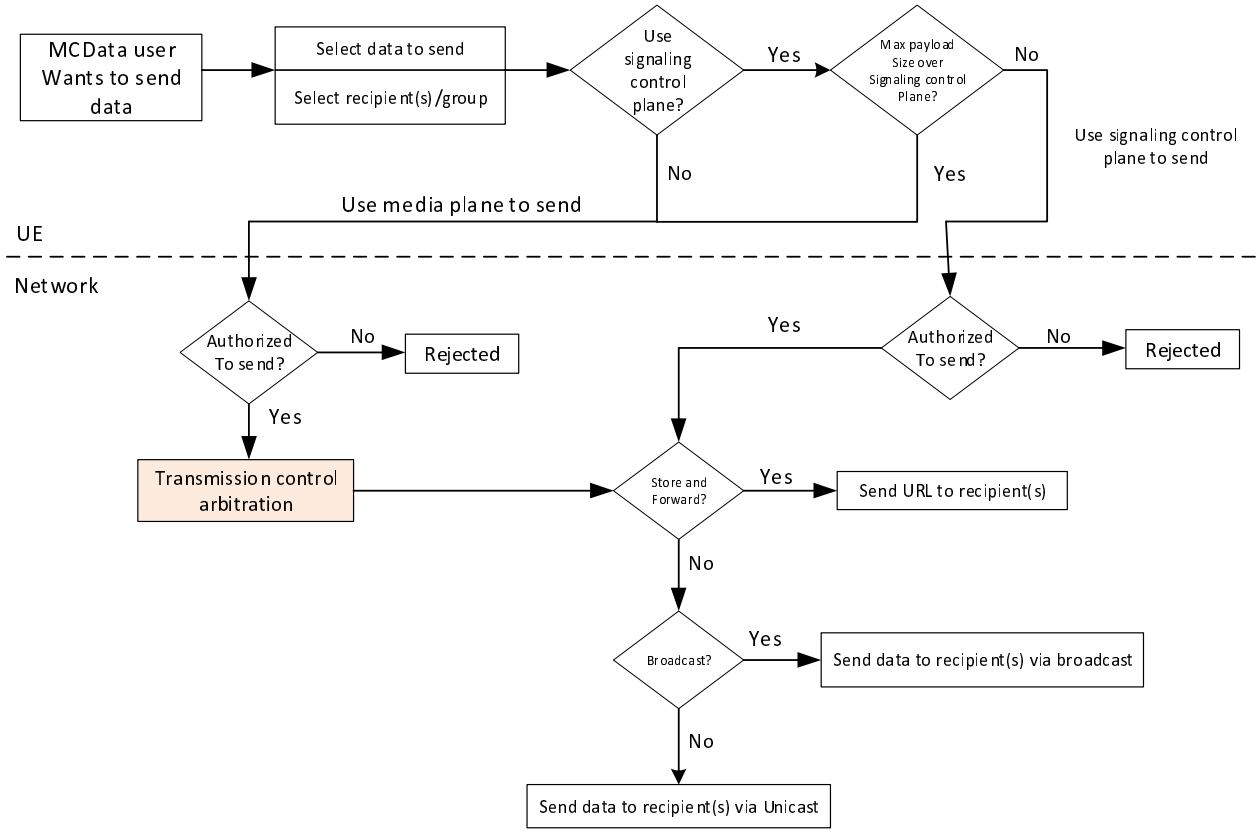

Figure B.1-1: Transmission control process

B.2 Transmission control arbitration

The transmission control arbitration is a central function of the transmission control process and is implementation specific. In a typical deployment, multiple or simultaneous requests can be received at the transmission control arbitration function. Each of these requests may be categorized into different request types with different queuing priorities, and therefore each request type will be maintained with separate queues. Each request shall not be present in more than one queue at any given time. The queue types and the order of queues may be configured by the MCData administrator, as described below.

- Transmission control queue: It is the primary queue from which the request is processed for transmission e.g. emergency communication requests may result in this queue and processed at the highest priority.

- Communication type queue: This queue may be sorted in the order of the communication type associated with the request. For example, the group communication requests may always take precedence over one-to-many or private communication requests.

- Static attribute queue: This queue may be formed based on the static attributes associated with the request e.g. group priority, user priority, which may be pre-configured by the MCData administrator.

- Dynamic attribute queue: This queue may be formed based on the dynamic attributes associated with the request e.g. location of the sending user, content size, etc.

Annex C VOID

Annex D (informative): Example of a User Message Storage Area

The figure in subclause 7.13.1 illustrates the high-level structure of the MCData message store where objects are stored in a flat structure in the user storage area. This flat data structure provides maximum flexibility for UI implementation to present stored objects to the user. However, a folder hierarchy structure provides a better visual presentation of the stored objects to the MCData user.

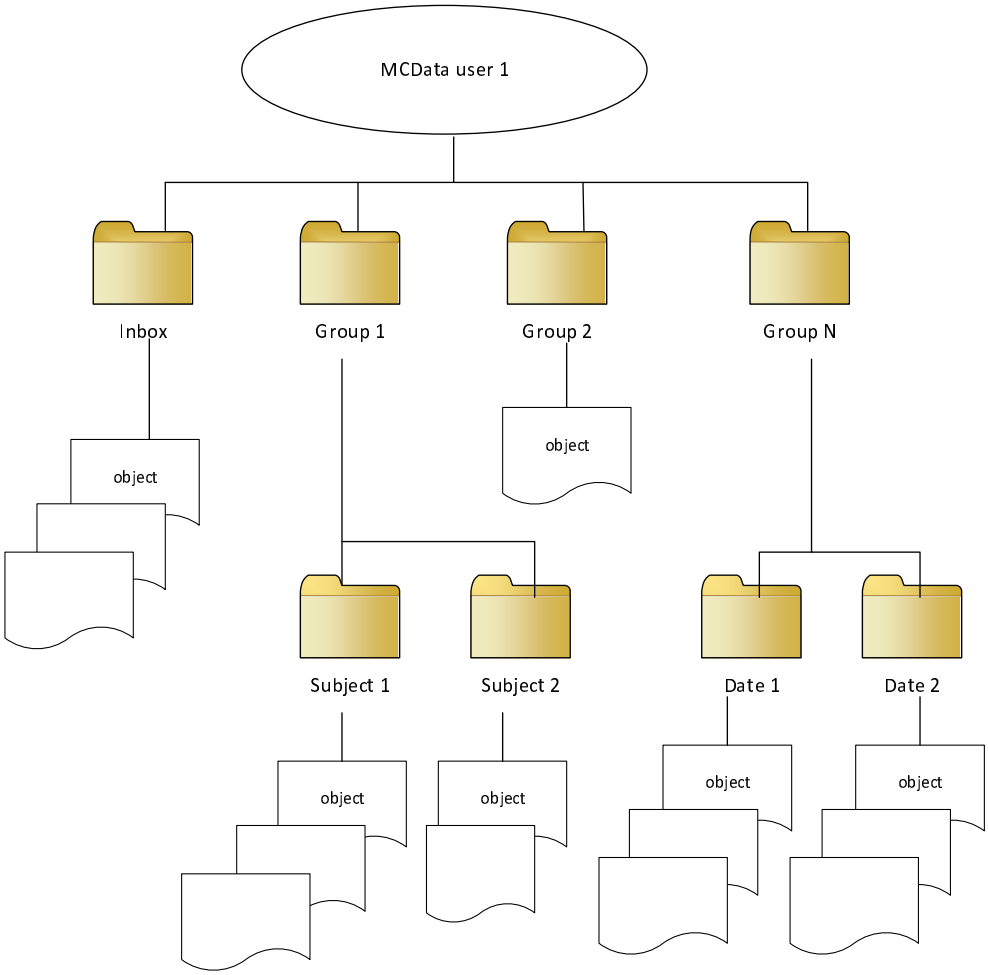

Figure D-1: User message storage area example

In figure D-1 the MCData user 1 message storage area in the MCData message store is constructed in folder hierarchical way. A system default folder, Inbox, is configured to receive all new objects coming from active communications. The MCData user 1 creates Group 1, Group 2 and Group N folders to store communication history for different group communications that he is a member of. Once the Group 1 folder is created the MCData user 1 can then move all the objects related to Group 1 communication from the Inbox to the Group 1 folder. The MCData user 1 can also create child folders in Group 1 folder to further divide the stored objects into different groupings such as with different subjects, Subject 1 and Subject 2. Similarly, the MCData user 1 creates child folders, Date 1 and Date 2, in Group N folder to store communication history in group N occurred in different dates. With this hierarchical folder structure, the MCData user 1 can browse his user account in the MCData message store interactively and navigate to the information he would like to see. For example, the MCData user 1 can start with the top-level root folder and traverse down the folder hierarchy to reach to Date 2 folder and see the communication history of group N in that particular date.

Annex E (informative): Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2016-07						Initial version.	0.0.0
2016-08						Update following SA6#12 incorporating the following pCRs: S6-160810; S6-160875; S6-160876	0.1.0
2016-10						Update following SA6#13 incorporating the following pCRs: S6-161169; S6-161170; S6-161243; S6-161265; S6-161085; S6-161173; S6-161174; S6-161245; S6-161176; S6-161248; S6-161177; S6-161178; S6-161266; S6-161267; S6-161184	0.2.0
2016-11						Update following SA6#14 incorporating the following pCRs: S6-161316; S6-161586; S6-161609; S6-161587; S6-161589; S6-161506; S6-161576; S6-161507; S6-161326; S6-161508; S6-161577; S6-161511; S6-161512; S6-161616; S6-161514; S6-161515; S6-161516; S6-161580; S6-161581; S6-161519; S6-161498; S6-161642	0.3.0
2016-11	SA#74	SP-160878				Submitted for Approval at SA#74	1.0.0
2016-12	SA#74	SP-160878				MCC Editorial update for publication after TSG SA approval (SA#74)	14.0.0
2017-03	SA#75	SP-170071	0002	2	F	Alignment of definitions	14.1.0
2017-03	SA#75	SP-170071	0003	2	F	Alignment of group affiliation and de-affiliation requirements	14.1.0
2017-03	SA#75	SP-170071	0004	1	F	Alignment of bearer management	14.1.0
2017-03	SA#75	SP-170071	0005	2	D	Adding descriptive text for the FD procedure section	14.1.0
2017-03	SA#75	SP-170071	0006	2	D	Resolving editor's notes for the short data service feature	14.1.0
2017-03	SA#75	SP-170071	0007	1	D	Adding references for the signalling control plane	14.1.0
2017-03	SA#75	SP-170071	0008	2	D	Adding descriptive text for the transmission and reception control section	14.1.0
2017-03	SA#75	SP-170071	0009		F	MCData correction of reference	14.1.0
2017-03	SA#75	SP-170071	0010		F	Alignment of business relationships, identities, and application of functional model to deployments	14.1.0
2017-03	SA#75	SP-170071	0011	3	F	file download editorials	14.1.0
2017-03	SA#75	SP-170071	0013	1	F	Off-network conversation management	14.1.0
2017-03	SA#75	SP-170071	0014	1	D	Editorial corrections	14.1.0
2017-03	SA#75	SP-170071	0015	1	F	Resolving EN in Scope	14.1.0
2017-03	SA#75	SP-170071	0016	5	F	Resolving EN in Functional model	14.1.0
2017-03	SA#75	SP-170071	0017	1	F	Resolving EN in SDS procedures	14.1.0
2017-03	SA#75	SP-170071	0018		F	Referring generic procedures from CFA	14.1.0
2017-03	SA#75	SP-170071	0020	2	F	Conversation management definitions	14.1.0
2017-03	SA#75	SP-170071	0021	2	F	Disposition alignments and corrections in SDS and FD	14.1.0
2017-03	SA#75	SP-170071	0022	1	F	Tx and Rx control procedure corrections	14.1.0
2017-03	SA#75	SP-170071	0025	1	F	MCData functional model alignment	14.1.0
2017-03	SA#75	SP-170071	0027	1	F	Moving configuration data to on-network only	14.1.0
2017-03	SA#75	SP-170071	0028	3	F	Resolve SDS on-network information flows EN	14.1.0
2017-03	SA#75	SP-170071	0030	1	F	Resolve FD information flows EN	14.1.0
2017-03	SA#75	SP-170071	0031	2	F	Adding end-to-end encryption requirements	14.1.0
2017-03	SA#75	SP-170071	0032	1	F	Resolve transmission control information flows EN	14.1.0
2017-03	SA#75	SP-170071	0033	2	F	Resolve conversation management EN	14.1.0
2017-03	SA#75	SP-170071	0034	1	F	Addition of definition for MCData ID	14.1.0
2017-03	SA#75	SP-170071	0035		F	Addition of definition for MCData ID	14.1.0
2017-03	SA#75	SP-170071	0036	3	F	Off-network information flows for SDS	14.1.0
2017-03	SA#75	SP-170071	0037	1	F	Resolve communication release information flows EN	14.1.0
2017-03	SA#75	SP-170071	0038	1	F	Conditions for using SDS media plane	14.1.0
2017-06	SA#76	SP-170392	0039	2	F	Correction on MCData reference points when using MBMS	14.2.0
2017-06	SA#76	SP-170392	0048		D	Additions to Definition and Abbreviations	14.2.0
2017-06	SA#76	SP-170392	0049	2	F	Clarifications to section 5 Arcitecture requirements	14.2.0
2017-06	SA#76	SP-170392	0051	1	F	Clarifications to section 6.5.1 that SDS Distribution function in MCData server talks to SDS function in MCData client not UE	14.2.0

2017-06	SA#76	SP-170392	0052		F	Clarifications to section 6.5.3.1.2	14.2.0
2017-06	SA#76	SP-170392	0054	1	D	Correct wrong reference in section 7.2	14.2.0
2017-06	SA#76	SP-170392	0056	3	F	Correct the MCData data disposition notification IEs	14.2.0
2017-06	SA#76	SP-170392	0058	1	D	Consistent use of pre-condition in section 7.4.2.2.2	14.2.0
2017-06	SA#76	SP-170392	0059	1	F	Inconsistent use of MCData group ID or list of recipients in request	14.2.0
2017-06	SA#76	SP-170392	0061	3	F	Content reference URL should be a mandatory IE when uploading a file	14.2.0
2017-06	SA#76	SP-170392	0062	5	F	Addition of new configuration and miscellaneous corrections	14.2.0
2017-06	SA#76	SP-170392	0063	5	F	Addition of identity management server address per group	14.2.0
2017-06	SA#76	SP-170392	0064		F	Correction on sending data with mandatory download	14.2.0
2017-06	SA#76	SP-170392	0070	2	F	Inclusion of KMSUri to allow multiple security domains	14.2.0
2017-06	SA#76	SP-170392	0071	4	F	Clarification to Auto-send	14.2.0
2017-06	SA#76	SP-170392	0076		F	Corrections to Group configuration data for all MC services	14.2.0
2017-06	SA#76	SP-170392	0078	2	F	CR to 23.282 on Auto-receive	14.2.0
2017-06	SA#76	SP-170394	0040	4	B	Information flow of File Distribution for off-network	15.0.0
2017-06	SA#76	SP-170394	0041	1	B	Functional model of File Distribution for off-network	15.0.0
2017-06	SA#76	SP-170394	0075	1	C	Functional model of File Distribution for off-network	15.0.0
2017-09	SA#76	SP-170682	0079	2	B	Introduction of SDS application type identifiers	15.1.0
2017-09	SA#76	SP-170685	0080	1	B	Addition of IWF and IWF-2	15.1.0
2017-09	SA#76	SP-170681	0083	1	A	File size check for FD	15.1.0
2017-09	SA#76	SP-170681	0085	1	A	Correction to configuration for Auto-receive parameter	15.1.0
2018-01	SA#78	SP-170891	0087	1	F	SDS location field: Alignment of Stage 2 with Stage 1 & Stage 3	15.2.0
2018-01	SA#78	SP-170891	0088	1	D	Editorial changes to MCData stage 2	15.2.0
2018-01	SA#78	SP-170895	0089	1	F	Adding application identifier in media plane SDSs	15.2.0
2018-01	SA#78	SP-170891	0090	1	F	Off-network Conversation Management clarifications	15.2.0
2018-01	SA#78	SP-170889	0094	2	A	PSI configuration for MCData service	15.2.0
2018-01	SA#78	SP-170891	0095	1	F	Completion of Communication Release	15.2.0
2018-01	SA#78	SP-170894	0096	1	F	MBMS packet recovery	15.2.0
2018-04	SA#79	SP-180148	0099	1	A	Correction of security specification references	15.3.0
2018-04	SA#79	SP-180155	0100	3	B	LMR E2EE user profile and group parameters	15.3.0
2018-04	SA#79	SP-180148	0102	2	A	Payload size limit for standalone SDS over signalling control plane	15.3.0
2018-04	SA#79	SP-180151	0103	1	F	Update of references to stage 1 specifications	15.3.0
2018-04	SA#79	SP-180148	0107	1	A	Duplicated procedure name for MCData Group SDS	15.3.0
2018-06	SA#80	SP-180367	0109		A	Clarification for presentation priority in MCData UE configuration	15.4.0
2018-06	SA#80	SP-180370	0110	3	A	Modify MCData download data response	15.4.0
2018-09	SA#81	SP-180677	0111	2	C	Media storage function in the MCData server	16.0.0
2018-09	SA#81	SP-180677	0113	3	C	Adding the Network base Message Store	16.0.0
2018-12	SA#82	SP-181178	0116	1	F	Corrections on CR implementation errors	16.1.0
2018-12	SA#82	SP-181178	0117	1	F	Configuration parameters to support requirement [R-6.1.1.2-009] are incorrect	16.1.0
2018-12	SA#82	SP-181178	0118	2	F	Corrections to Table A.2-1, Table A.4-2 and Table A.5-2	16.1.0
2018-12	SA#82	SP-181178	0119	4	F	Corrections to "Release of MCData communication using HTTP" procedures	16.1.0
2018-12	SA#82	SP-181178	0120	1	F	Alignment with the MCData content server	16.1.0
2018-12	SA#82	SP-181178	0121	1	F	There is no file download when using media plane for FD	16.1.0
2018-12	SA#82	SP-181178	0122	2	B	Procedures for MCData message store operations	16.1.0
2018-12	SA#82	SP-181178	0123	1	F	Correct misalignment on MCData user usage	16.1.0
2019-03	SA#83	SP-190074	0124	-	F	Correct the location of MCData content server and MCData message store configuration parameters in table A.3-2 configuration table	16.2.0
2019-03	SA#83	SP-190074	0125	-	D	Editorial correction on the term of MCData	16.2.0
2019-03	SA#83	SP-190074	0126	2	B	Additional architecture requirement for MCData message store	16.2.0
2019-03	SA#83	SP-190074	0127	2	B	Generic SDS procedure with MCData message store	16.2.0
2019-03	SA#83	SP-190074	0128	3	B	Providing data for a user entering an ongoing MCData group conversation	16.2.0

2019-03	SA#83	SP-190075	0130	1	B	MCData user profile migration information	16.2.0
2019-03	SA#83	SP-190074	0131	2	F	Message store object and metadata	16.2.0
2019-03	SA#83	SP-190075	0132	1	B	Introduction of gateway MC server for interconnection	16.2.0
2019-03	SA#83	SP-190074	0133	2	B	Example of user storage area with folder hierarchy structure	16.2.0
2019-03	SA#83	SP-190074	0134	2	C	Making data sync between MCData message store and message store client bi-directional	16.2.0
2019-03	SA#83	SP-190074	0135	1	B	Add more operations to the MCData message store	16.2.0
2019-03	SA#83	SP-190074	0136	1	B	Off-network SDS with MCData message store	16.2.0
2019-06	SA#84	SP-190488	0137	1	B	Restricting incoming private communications	16.3.0
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