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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

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- x the first digit:
 - 1 presented to TSG for information;
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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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".
- [22] 3GPP TS 22.179: "Mission Critical Push to Talk (MCPTT); Stage 1".

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 MCDData client(s) from the MCDData 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 MCDData 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 MCDData message store

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

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

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

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

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

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

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

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

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

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

MCDData 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).

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

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

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

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

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

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

Reply identifier: A reference to the original MCDData 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 MCDData transaction within a conversation.

Transmission control: A mechanism that allows the MCDData service to regulate data transmission requests from the sending MCDData users, either prior to or after active sending from the MCDData 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 given in 3GPP TS 22.179 [22] apply:

**Group-broadcast group
User-broadcast group**

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:

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

For MCDData types other than SDS using signalling control plane, the MCDData service invokes a transmission request grant approach before data is permitted to be transmitted. The MCDData service provides configurable limits for the maximum amount of data for and/or maximum amount of time that an MCDData user can transmit in a single request, which may be configured by the MCDData administrator.

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

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

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

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

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

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

5.2 Reception control

The MCDData service shall support the ability to receive small amounts of data automatically. The MCDData service may store data waiting for delivery in a temporary store, and notify availability to the receiving MCDData 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 MCDData user has an active MCDData message store account and has activated lossless communication, the MCDData service deferred delivery shall not be used when the user is offline.

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

The MCDData service shall provide a mechanism for the MCDData 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 MCDData 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 MCDData administrator.

5.3 Short Data Service capability

The MCDData 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 MCDData user, with or without user or application provided data.

The MCDData 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 MCDData service.

The MCDData 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 MCDData user.

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

5.4 File distribution capability

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

The MCDData service shall allow the MCDData user to send a file or a URL of a file to another MCDData user. The source of the file can originate either from an MCDData 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 MCDData 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 MCDData service shall support aggregation of download completed reports when files are distributed to multiple recipients.

The MCDData service shall support mechanisms for detection and recovery of lost data. A receiving MCDData 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:

- MCDData 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, MCDData 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.

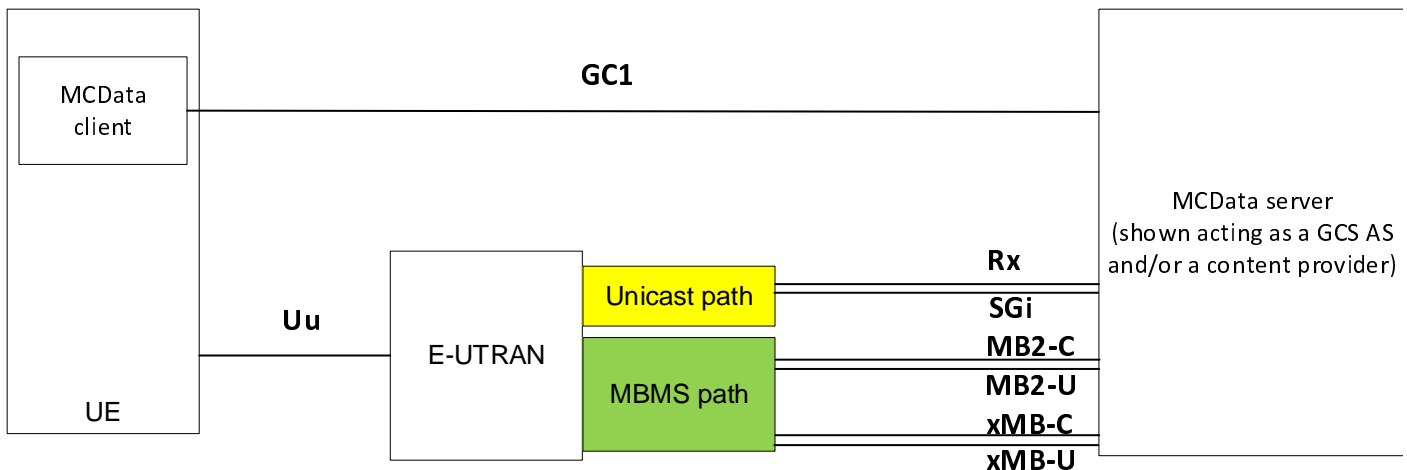


Figure 5.4-1 MCDData on-network architecture showing the unicast and MBMS delivery paths

5.5 Data streaming capability

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

The MCDData service may allow the MCDData user to send a data stream or a URL of a data stream to another MCDData user. The source of the data stream can originate either from an MCDData 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 MCDData user. The data streaming mechanisms shall support both unicast and broadcast delivery methods.

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

The MCDData 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 MCDData group affiliation and MCDData group de-affiliation

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

MCDData 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 MCDData service for MCDData users affiliated to MCDData groups:

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

For an MCDData session request, resources shall be requested utilising interaction with dynamic PCC. The MCDData system shall request resources over Rx to a PCRF. The dedicated bearer for MCDData 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 MCDData in order for the PCRF to evaluate the correct QCI.

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

Depending on operator policy, for media plane:

- the MCDData 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 MCDData communications may cause the pre-emption of lower priority pre-emptible EPS bearers (for MCDData or for other applications), if the maximum number of bearers or maximum traffic capacity has been reached, in favour of the newly initiated MCDData EPS bearer. In this case, if the new EPS bearer to be used for MCDData 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 MCDData 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 MCDData emergency communications shall have highest priority level among MCDData communication types. The EPS bearer(s) for MCDData imminent peril communications shall have higher priority level than for normal MCDData communications but lower than the priority level for MCDData 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 MCDData UE shall use the signalling plane for disposition request and disposition notifications. For session SDS, the MCDData 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 MCDData message store

MCDData message store is used by MCDData users to store their MCDData communications permanently; it shall provide secured storage area for each authorized MCDData user having a user account. The storage area is identified by the MCDData user's MCDData ID. The MCDData message store shall allow an MCDData 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 MCDData communication, the participating function on the MCDData server of a MCDData user participant shall, if the configuration to store the MCDData communication is enabled for and if requested by the MCDData user, deposit messages and files exchanged in the conversation to the MCDData user's storage area in the MCDData message store. When depositing the MCDData communication into the MCDData message store, if no such MCDData user account is available on the MCDData message store the MCDData server shall create the user's account first and then deposit the MCDData communications. The MCDData message store shall support user account creation and deposit MCDData communications operations from the MCDData server after successful authentication and authorization. The MCDData message store shall support the message store client to retrieve, update, delete, search and synchronize MCDData communications stored in the MCDData message store, after successful authentication and authorization.

The MCDData user shall have an option if he wants to store the MCDData communications in the MCDData message store or not. Based on the request from MCDData user, messages and files exchanged in an active MCDData communication shall be stored as objects in the MCDData 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 MCDData IDs, Conversation identifier etc.; and
 - b. other information, such as object identifier, 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 MCDData user's account in the MCDData 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 MCDData content server, is stored separately in the MCDData user's storage account. With proper security and authorization, this URL can be accessible by other network entities such as the MCDData content server.

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

When a MCDData 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 MCDData message store, either automatically or manually (i.e. interacts with the user on which option to synchronize or no synchronization at all), before any MCDData service starts.

5.11 IP connectivity (IPcon) capability

IP connectivity service enables the exchange of IP Data using MCDData 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.

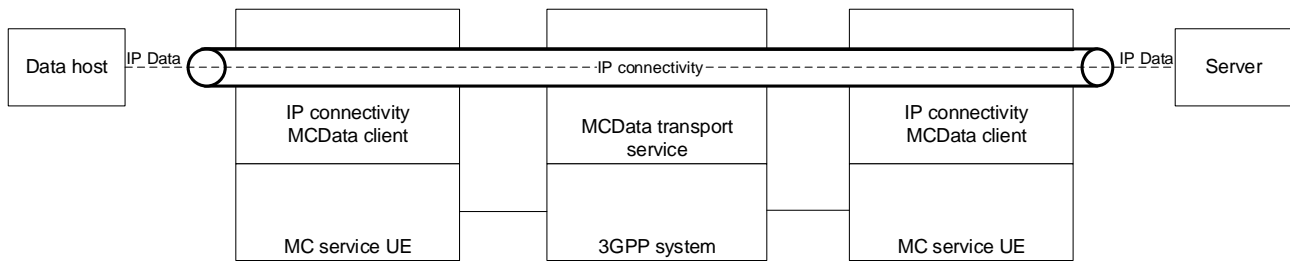


Figure 5.11-1: IP connectivity model

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.

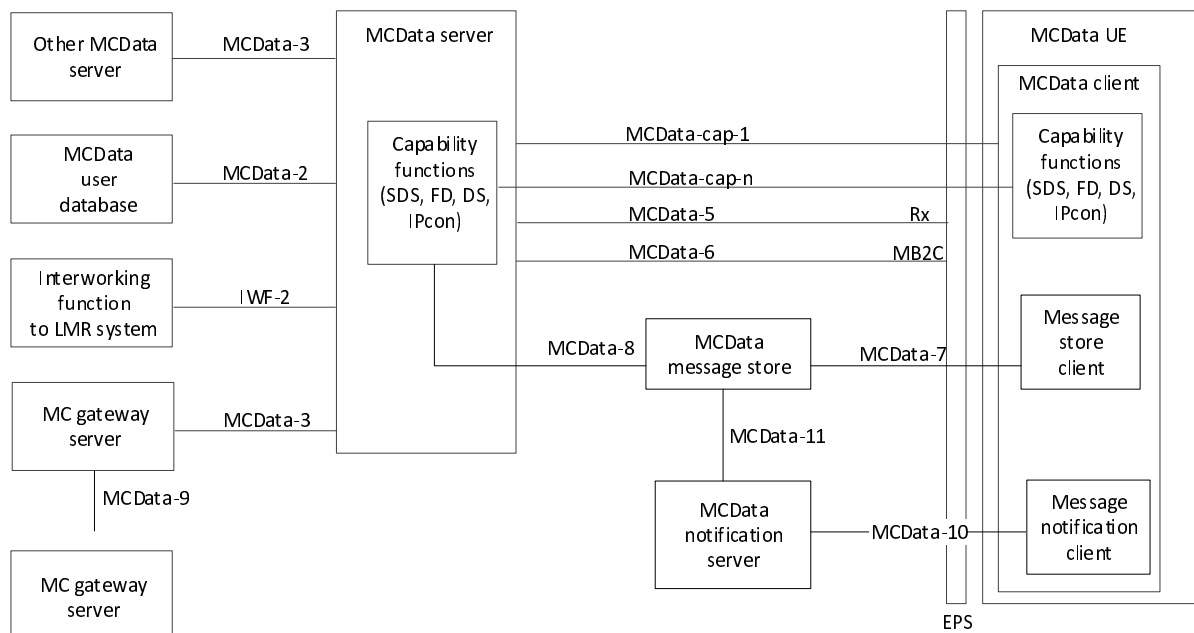


Figure 6.4.1-1: Generic application plane functional model

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

NOTE 1: The security aspects of new network components (MCDData message store, Message store client and MCDData notification server) and the associated new reference points are the responsibility of SA3 and thus outside the scope of the present document.

An MCDData server controls the signaling reference points and the corresponding media allowing different paths for media and signalling. The MCDData server determines if it needs to stay in the media path based on the feature(s) involved in the MCDData communication, e.g., if the MCDData message store is required in the MCDData communication, the MCDData server shall remain in the media path.

NOTE 2: If the MCDData server is not in the MCDData communication media path, any implications regarding MC user data logging are left to implementation.

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 MCDData client

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

6.4.3.1.2 MCDData server

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

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

For MBMS delivery, the MCDData 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 MCDData 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 MCDData server functional entity is supported by the SIP AS functional entity of the signalling control plane.

The MCDData server shall support the controlling role and the participating role. The MCDData server may perform the controlling role for one-to-one and group data communication. The MCDData 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 MCDData server assuming the controlling role, while one or more MCDData servers in participating role may be involved.

The MCDData server performing the controlling role is responsible for:

- handling transmission and reception control (e.g. policy enforcement for participation in the MCDData group communication) towards all the MCDData 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 MCDData server's served affiliated users;
- managing SDS and FD data distribution during MCDData group communication; and
- managing the MCDData transport service for IP connectivity.

The MCDData server performing the participating role is responsible for:

- handling transmission control (e.g. authorization for participation in the MCDData group communication) to MCDData users of the one-to-one and group data communication;
- group affiliation support for MCDData 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 MCDData server's served affiliated users;
- relaying the MCDData communication messages between the MCDData client and the MCDData server performing the controlling role; and
- handling reception control (e.g. temporarily storing the data to present to the MCDData user as required) to its MCDData users of the one-to-one and group data communication.

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

6.4.3.1.3 MCDData user database

This functional entity contains information of the MCDData user profile associated with an MCDData ID that is held by the MCDData service provider at the application plane. The MCDData user profile is determined by the mission critical organization, the MCDData service provider, and potentially the MCDData 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 MCDData interconnection services with a partner MCDData system in a different trust domain whilst providing topology hiding. It acts as a proxy for one or more MCDData servers in the partner MCDData system without needing to expose the MCDData servers in the primary MCDData system outside the trusted domain of the primary MCDData system. It may be a role of the MCDData 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 MCDData servers within the MCDData system and the interconnected MCDData 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 MCDData message store

The MCDData message store is a network base persistent store that allows Mission Critical Organization to configure their MCDData users to permanently store their MCDData communications. Once configured a MCDData user will be allocated a secured storage area (i.e. size) in the MCDData message store that is only accessible by that configured MCDData user and any authorized users. The MCDData 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 context 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 MCDData client to manage the MCDData communication history stored in MCDData message store for a particular MCDData user. It supports the secure access to a MCDData user's configured MCDData 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 MCDData notification server

The MCDData notification server provides the centralized notification function in the network. The MCDData 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 MCDData 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 MCDData 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 MCDData 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 MCDData notification server. However, if a Push notification delivery is used, then the MCDData notification server asynchronously delivers the events received from the application server to the application through a PUSH Enabler server. The MCDData 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 MCDData notification servers are deployed.

6.4.3.6 Message notification client

The Message notification client is used to request the notification service from the MCDData notification server. Once the notification service request is authorized by the MCDData notification server, the Message notification client will communicate the callback endpoint, received from the MCDData notification server, to the MCDData message store to be used for notification message delivery.

When multiple MCDData 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 MCDData notification server from multiple available MCDData 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 MCDData service are described in the following subclauses.

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

The MCDData-2 reference point, which exists between the MCDData server and the MCDData user database, is used by the MCDData server to obtain information about a specific user. The MCDData-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 MCDData-3 (between the MCDData server and the MCDData server)

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

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

The MCDData-5 reference point, which exists between the MCDData server and the EPS, is used, subject to the conditions below, by the MCDData 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].

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

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

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

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

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

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

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

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

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

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

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

The MCDData-9 reference point, which exists between the MC gateway server and the MC gateway server in an interconnected MCDData system for MCDData application signalling for establishing MCDData sessions, shall use the SIP-3 reference point for transport and routing of signalling. The MCDData-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 MCDData-10 (between the Message notification client and MCDData notification server)

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

6.4.4.1.10 Reference point MCDData-11 (between the MCDData message store and the MCDData notification server)

The MCDData-11 reference point, which exists between the MCDData message store and the MCDData notification server, is used by the MCDData 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.

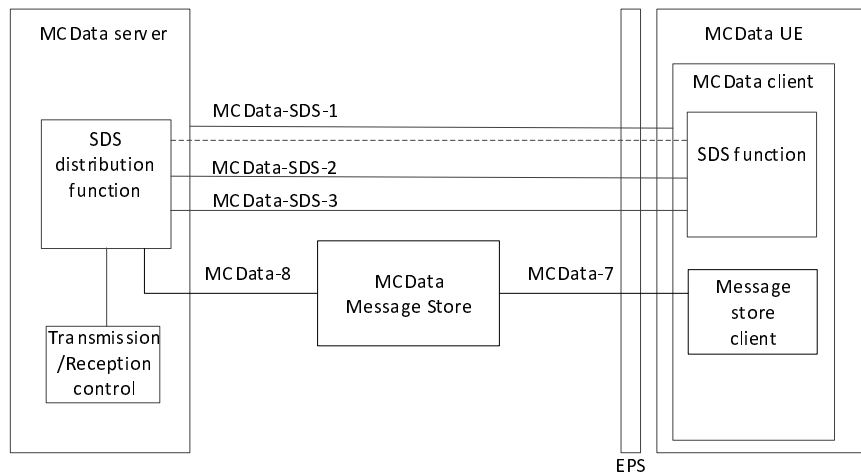


Figure 6.5.1-1: Application plane functional model for SDS

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. Secondly, 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.

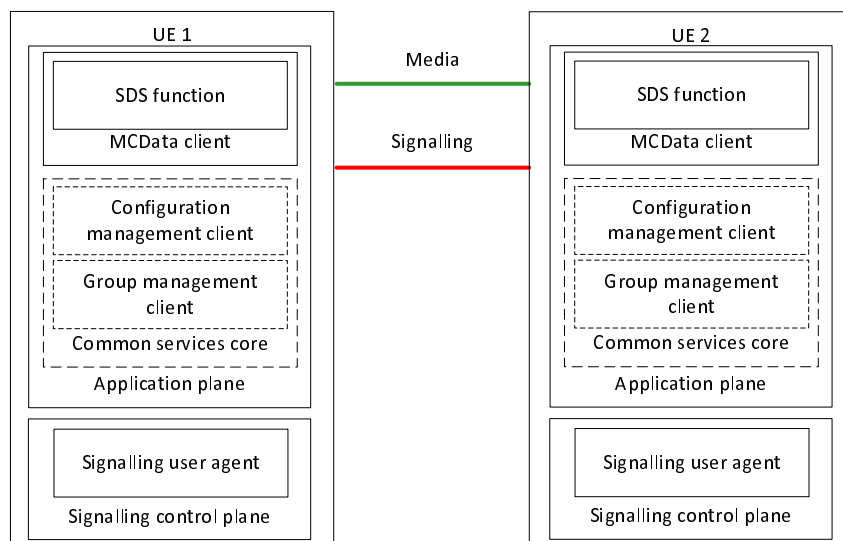


Figure 6.5.2-1: Application plane functional model for SDS

6.5.3 Functional entities description

6.5.3.1 Application plane

6.5.3.1.1 SDS function

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

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

6.5.3.1.3 Transmission/Reception control

This functional entity is responsible for transmission and reception control of MCDData SDS data transaction between the sending MCDData UE, the MCDData server, and the receiving MCDData 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 MCDData-SDS-1 (between the SDS distribution function and the SDS function)

MCDData-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 MCDData server and SDS function of the MCDData client. This reference point is also used for MCDData application signalling during session establishment in support of SDS data transfer.

The MCDData-SDS-1 reference point shall use the SIP-1 and SIP-2 reference points for transport and routing of SIP signalling. MCDData-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 MCDData-SDS-2 and MCDData-SDS-3 may be used appropriately.

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

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

The MCDData-SDS-2 reference point, which exists between the SDS distribution function and the SDS function of the MCDData 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 MCDData server and the MCDData client. The MCDData-SDS-2 reference point uses the SGi reference point defined in 3GPP TS 23.002 [10].

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

The MCDData-SDS-3 reference point, which exists between the SDS distribution function of the MCDData server and the SDS function of the MCDData client, is used by the SDS distribution function of the MCDData server to send downlink multicast SDS data to the SDS function of the MCDData client. The MCDData-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.

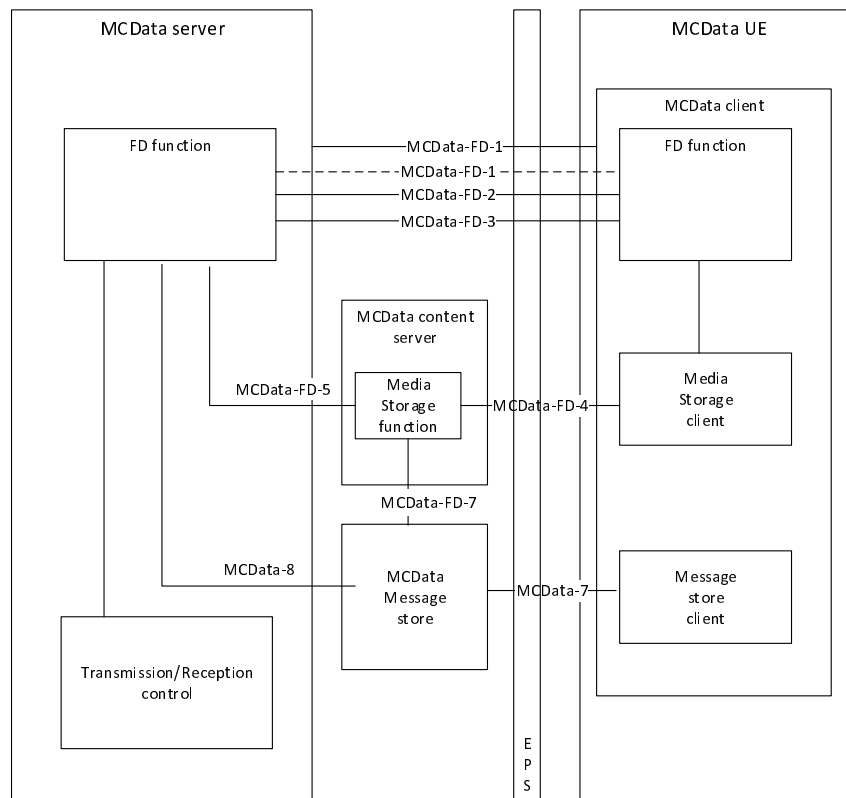


Figure 6.6.1-1: Application plane functional model for file distribution

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

- MCDData-FD-1 reference point is primarily used for MCDData application signalling for establishing a session in support of MCDData file distribution. Secondly, MCDData-FD-1 reference point is also used for both uplink and downlink unicast data (e.g., URL associated to file, file download completed report).
- MCDData-FD-2 reference point carries uplink and downlink unicast file data between the FD functions of the MCDData server and the MCDData UE.
- MCDData-FD-3 reference point carries downlink multicast file data from the FD function of the MCDData server to the FD function of the MCDData UE.
- MCDData-FD-4 reference point carries uplink and downlink unicast file data between the media storage function of the MCDData Content server and the media storage client of the MCDData UE.
- MCDData-FD-5 reference point supports the MCDData server to access the stored files in the MCDData 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.
- MCDData-FD-7 reference point supports the upload and download of file data between MCDData content server and MCDData message store.

NOTE: The security aspects of MCDData-FD-5 and MCDData-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.

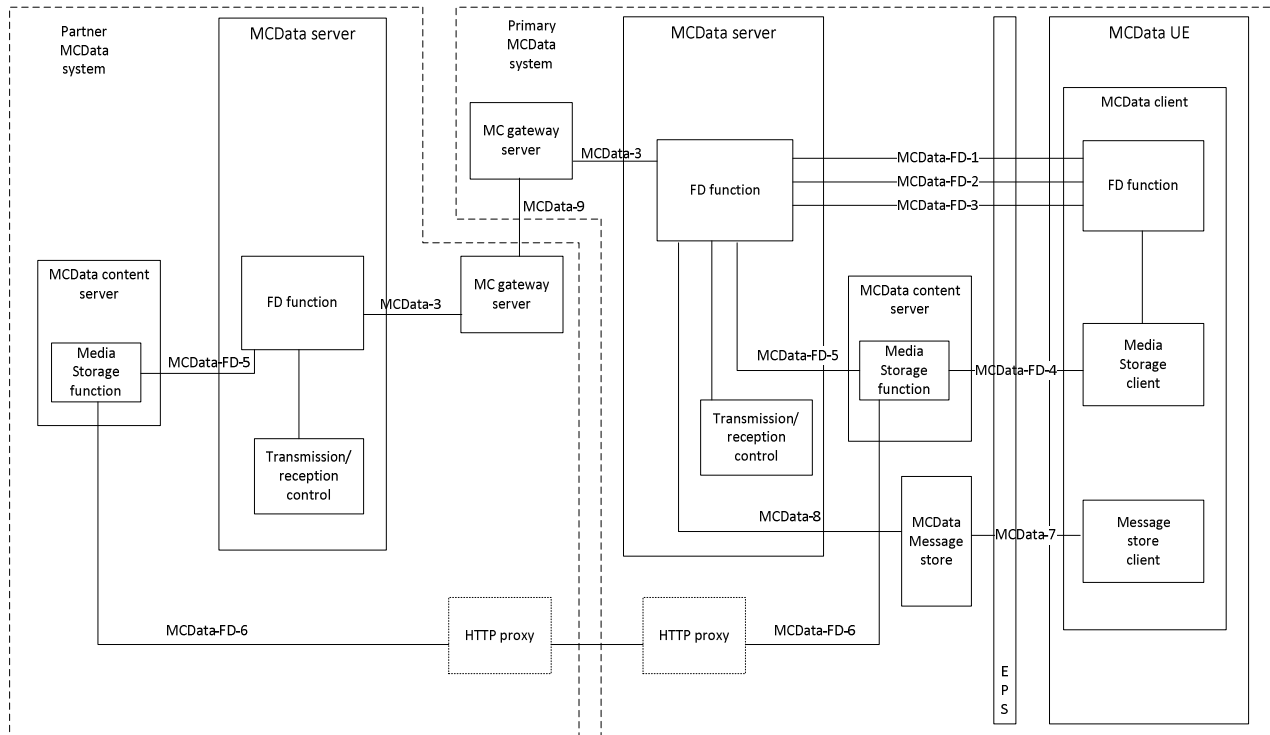


Figure 6.6.1a-1: Application plane functional model for file distribution

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

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

6.6.2 Off-network functional model

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

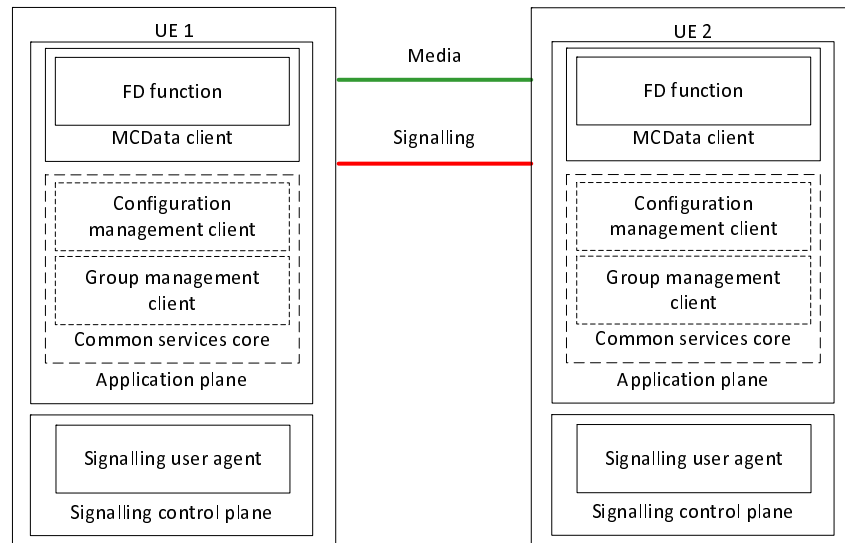


Figure 6.6.2-1: Application plane functional model for FD

6.6.3 Functional entities description

6.6.3.1 Application plane

6.6.3.1.1 FD function

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

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

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

6.6.3.1.2 Media storage client

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

6.6.3.1.3 Transmission/Reception control

This functional entity is responsible for transmission and reception control of MCDData file data between the sending MCDData UE, the MCDData server, and the receiving MCDData 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 MCDData 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 MCDData 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 MCDData UE in case of MCDData file distribution. It also supports download of stored media by the MCDData UE in case of file distribution via media storage client.

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

6.6.3.1.5 MCDData content server

The MCDData content server functional entity provides a repository area in the MCDData trust domain allowing authorized MCDData users to temporarily store files that are intended to share to other MCDData users. It provides common pool of storage area (i.e. size) to all authorized MCDData users to use, no personal space is allocated. An authorized MCDData 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 MCDData server will use the defined reference point to access the files stored in the MCDData 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 MCDData content server may share files with another MCDData content server in another MCDData system to support interconnection.

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

NOTE: The security aspects of the MCDData 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 MCDData-FD-1 (between the FD functions of the MCDData client and the MCDData server)

MCDData-FD-1 reference point is used for MCDData application signalling for establishing a session in support of MCDData 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 MCDData-FD-1 reference point shall use the SIP-1 and SIP-2 reference points for transport and routing of SIP signalling. MCDData-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 MCDData-FD-1.

Messages supported on this interface include the uplink and the downlink unicast file transaction between the MCDData clients in MCDData communication via the MCDData 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 MCDData user and MCDData application.

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

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

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

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

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

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

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

The MCDData-FD-3 reference point, which exists between the FD functions of the MCDData client and the MCDData server, is used by the FD function of the MCDData server to send downlink multicast file data to the FD function of the MCDData client. The MCDData-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 MCDData-FD-4 (media storage function and media storage client)

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

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

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

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

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

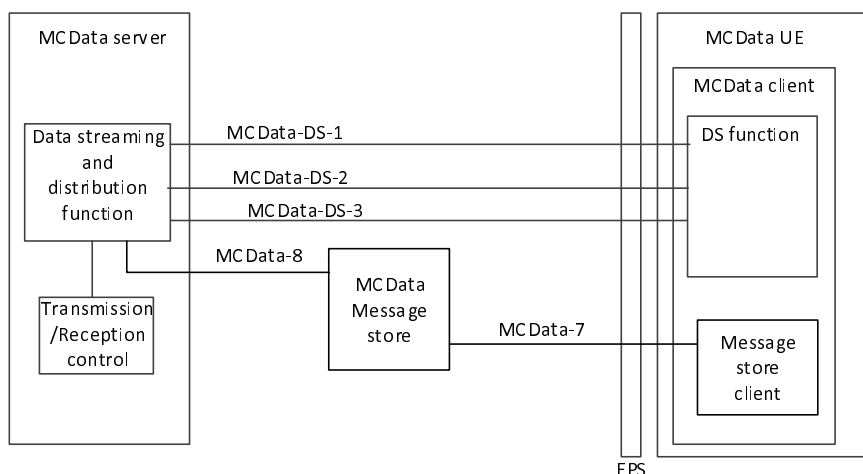


Figure 6.7.1-1: Application plane functional model for data streaming

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 MCDData UE, the MCDData server, and the receiving MCDData 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 MCDData 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 MCDData-DS-1 (between the data streaming and distribution function and the DS function)

MCDData-DS-1 reference point is used for MCDData application signalling for establishing a session in support of MCDData data streaming. The bearer is also used for both uplink and downlink unicast stream download reports (e.g., stream start and stop records). The MCDData-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 MCDData clients MCDData communication via the MCDData 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 MCDData user and MCDData application.

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

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

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

The MCDData-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 MCDData server and the DS function of the MCDData client. The MCDData-DS-2 reference point uses the SGI reference point defined in 3GPP TS 23.002 [10].

MCDData-DS-2 supports the following functions:

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

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

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

The MCDData-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 MCDData server to send multicast data stream to the DS function of the MCDData client. The MCDData-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.

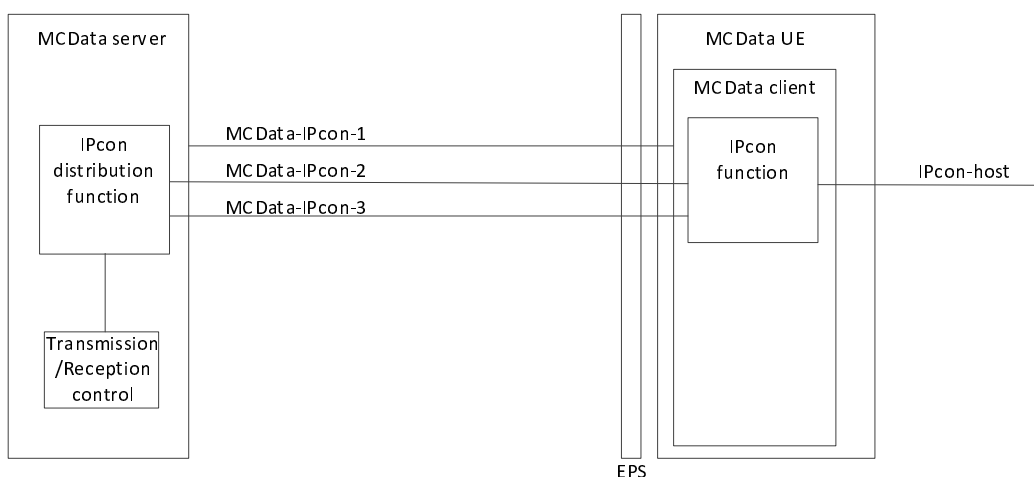


Figure 6.8.1-1: Application plane functional model for IP connectivity

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

- MCDData-IPcon-1 reference point is used for MCDData application signalling for establishing a session in support of MCDData IP connectivity.
- MCDData-IPcon-2 reference point carries bidirectional IP Data for point-to-point MCDData IP connectivity over the media plane between the U-IPcon distribution function of the MCDData server and the IPcon function of the MCDData client(s).
- MCDData-IPcon-3 reference point is used by the IP-con distribution function of the MCDData server to send unidirectional downlink IP Data to the IP-con function of the MCDData 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 MCDData 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 MCDData server is responsible for the distribution of IP Data to MCDData communication participants. The IPcon distribution function of the MCDData server provides the following functionality:

- reception of uplink IP Data transmission by means of the MCDData-IPcon-2 reference points;
- replicate the IP Data as needed for distribution to those MCDData communication participants using unicast transport;
- distribute downlink data by IP unicast transmission to those MCDData communication participants utilizing unicast transport by means of the MCDData-IPcon-2 reference points; and
- distribute downlink IP Data using multicast downlink transport by means of the MCDData-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 MCDData client, the MCDData server, and the receiving MCDData 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 MCDData 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 MCDData-IPcon-1 (between the IPcon distribution function and the U-IPcon function)

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

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

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

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

MCDData-IPcon-3 reference point carries downlink unidirectional IP Data over the media plane between the IPcon distribution function of the MCDData server and the IPcon function of the MCDData 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 MCDData service specific identities (e.g. MCDData ID, MCDData 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 MCDData service, can be found in clause 9 of 3GPP TS 23.280 [5].

7 Procedures and information flows

7.1 MCDData service configuration

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

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

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

When an MCDData user has affiliated to an MCDData group then the MCDData user can send and receive MCDData related media for that MCDData group. When an MCDData user has de affiliated from an MCDData group then the MCDData user cannot send and receive MCDData related media to and from that MCDData 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 MCDData 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 MCDData client;
- The MC service server is the MCDData server; and
- The MC service ID is the MCDData ID.

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

MCDData may use pre-established MBMS bearer for the MCDData 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 MCDData 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 MCDData client;
- The MC service server is the MCDData server; and
- The MC service ID is the MCDData ID.

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

MCDData may use dynamic MBMS bearer for the MCDData 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 MCDData 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 MCDData client;
- The MC service server is the MCDData server; and
- The MC service ID is the MCDData ID.

The MCDData service shall use the MCDData-SDS-1, MCDData-SDS-2, MCDData-FD-1, MCDData-FD-3, MCDData-DS-1 and MCDData-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.

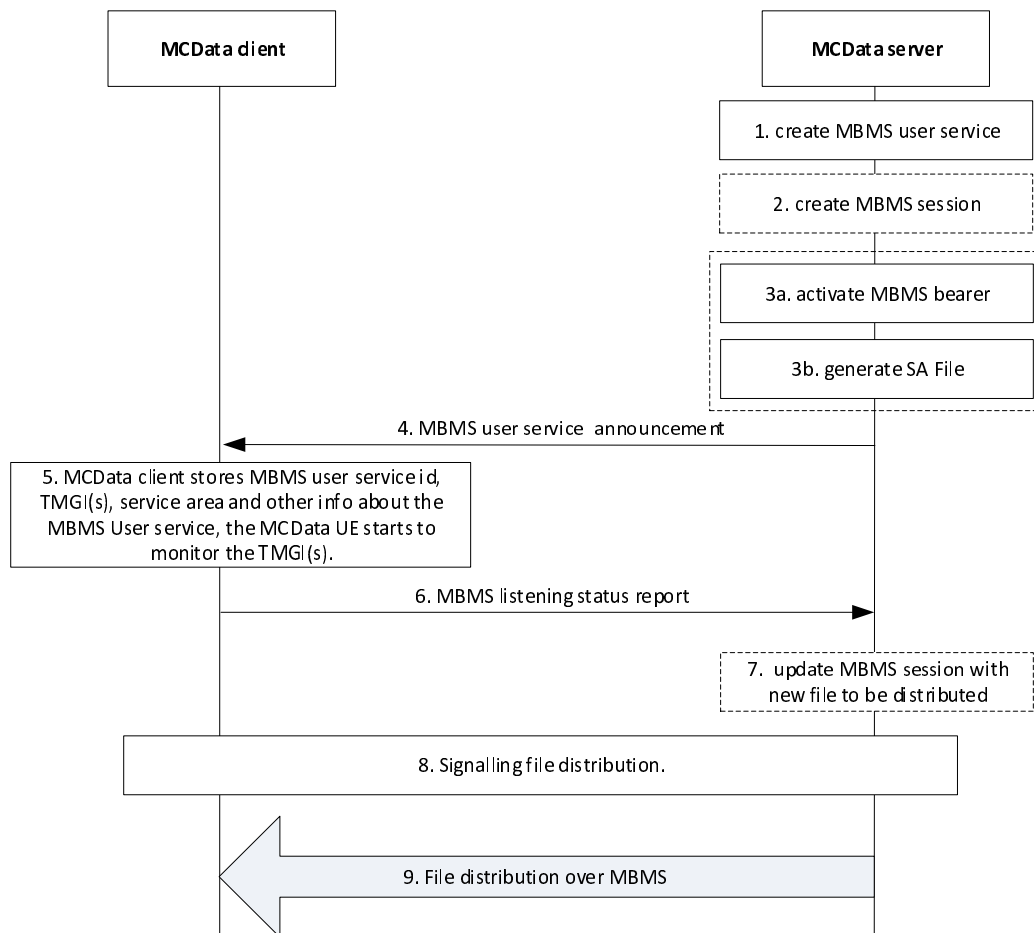


Figure 7.3.5.3.1.2-1: Use of pre-established MBMS user service

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 MCDData 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 MCDData server makes use of the xMB interface and wants to deliver a file to a group, the MCDData 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 MCDData server signals the file transmission over the MBMS user service to the targeted MCDData 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 MCDData server can start pushing the file to the corresponding URL.

9. The file, transmitted with the MBMS download delivery method, is received by the MCDData clients. If the MCDData server does not make use of the xMB interface, the MCDData 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 MCDData server decides to establish an MBMS user service for the distribution of a given file. The MBMS user service is announced to the MCDData client, together with the file information to be received.

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

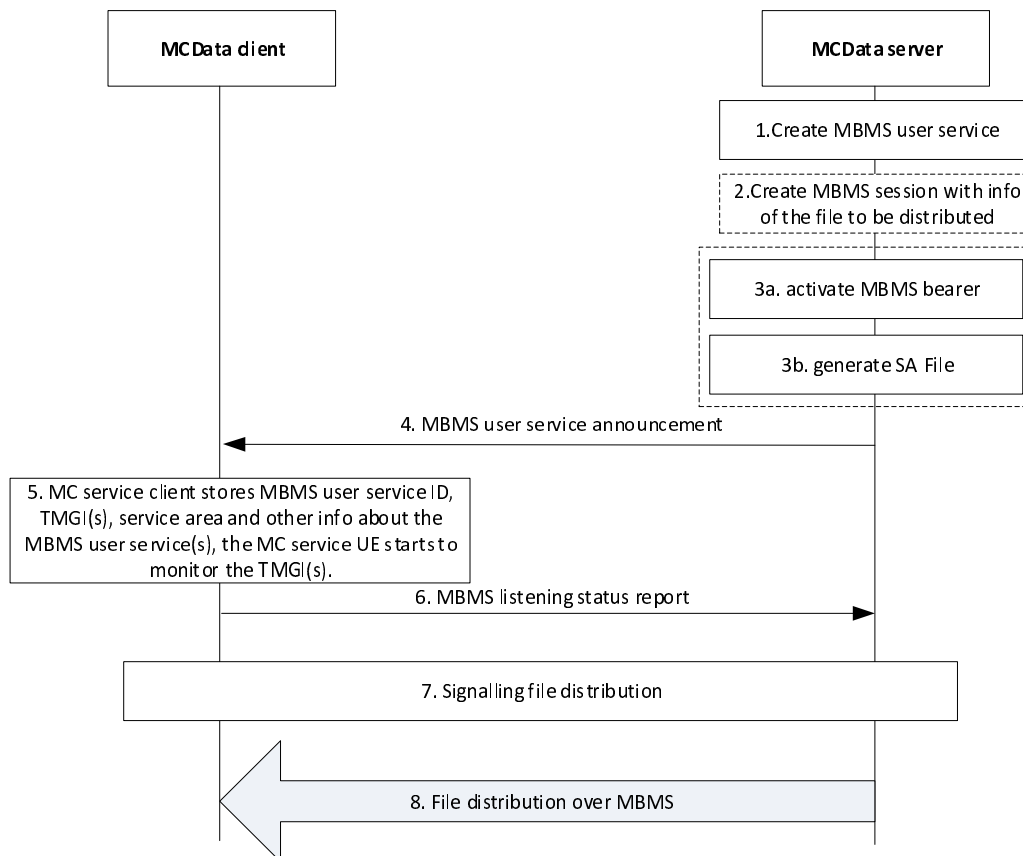


Figure 7.3.5.3.2-1: Use of dynamic MBMS user service establishment

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 MCDData server decides to distribute the file over the MB2 interface to MCDData users from the target MCDData group.

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

NOTE 2: For the push ingest mode, the MCDData 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 MCDData server from the MCDData content server.

Pre-conditions:

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

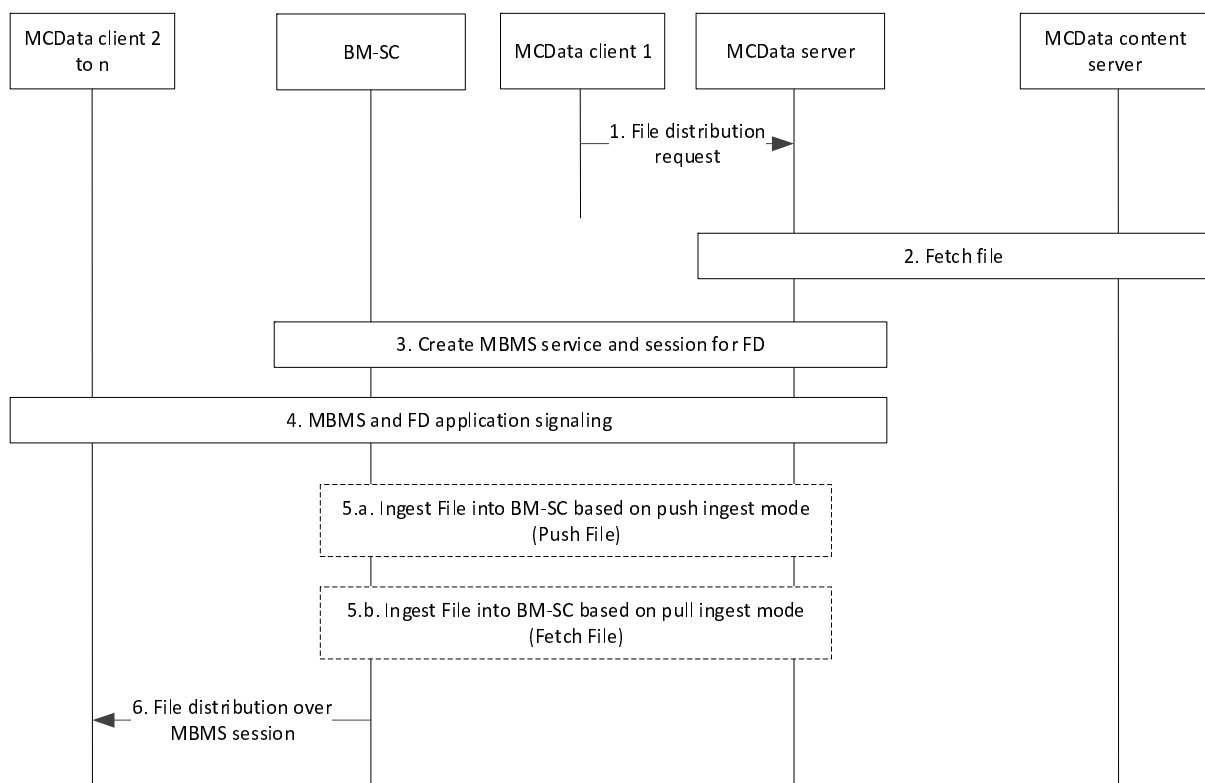


Figure 7.3.5.3.3.2-1: File fetching by the MCDData server for file distribution over MBMS

1. The MCDData server receives a request from the MCDData client 1 to distribute a file to a target MCDData group. The MCDData file distribution request contains the resource location (i.e. the file URL) in the MCDData content server.
2. The MCDData server decides to fetch the file from the MCDData content server via the MCDData-FD-5 reference point.
3. The MCDData 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 MCDData server indicates, among other session properties, the ingest mode. For the case of pull ingest mode, the MCDData 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 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.

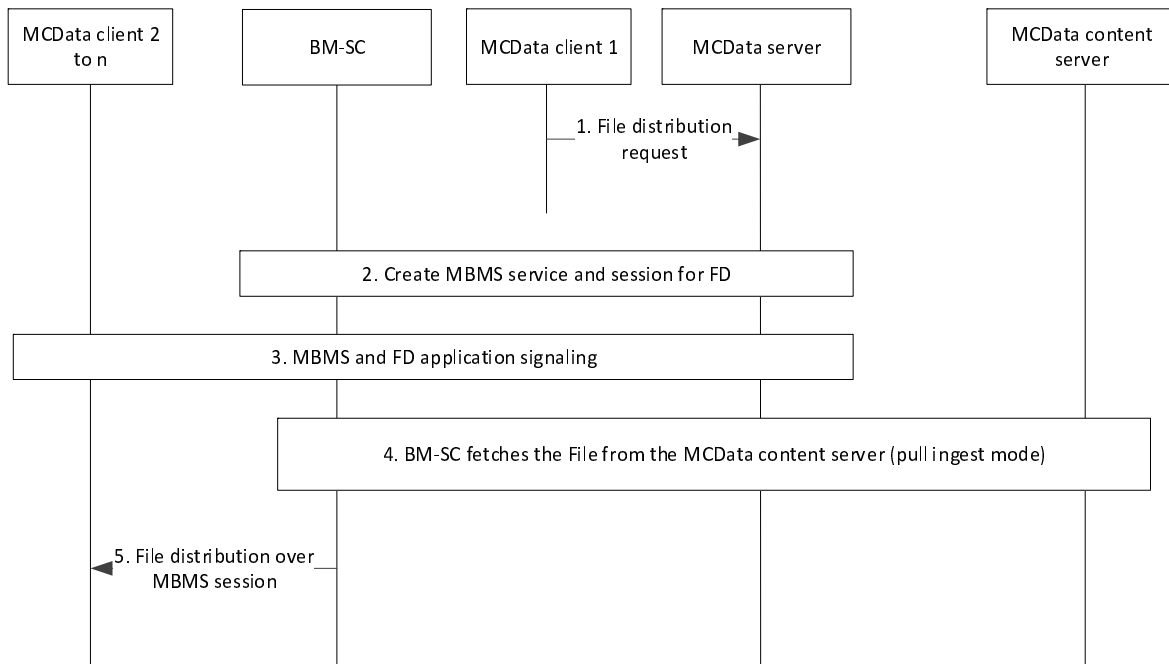


Figure 7.3.5.3.3.3-1: File fetching by the BM-SC for file distribution over MBMS

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

7.3.6 Group communication connect and disconnect over MBMS bearer procedures

7.3.6.1 General

MBMS bearer can be used for MCDData group communication. One MBMS bearer is not permanently associated to one specific group or group communication. Before sending data packets of a group communication over MBMS bearer, the MCDData server shall send the association information between group communication and the MBMS bearer. The group session setup procedure indicates the media stream within one MBMS bearer that is used for the specific group communication. When the group communication over the MBMS bearer is finished, this temporary association information of an MCPTT group communication to specific resources on a MBMS bearer is undone. The procedure in clause 7.3.6 requires that the group session is setup before the data transmission starts. This eliminates the need for the receiving clients to continuously use a unicast bearer. Prior to group session setup, the MBMS bearer is activated and announced to the MCDData clients.

NOTE: It is implementation-specific that one MBMS bearer can be re-assigned to different groups, or is associated to only one group.

7.3.6.2 Procedure

The procedure in this clause uses an establishment of group communication as described in clause 7.4.2.7. Similarly, the procedure defined in this clause is also applicable for the group communication established as described in clause 7.4.2.6.

7.3.6.2.1 Group communication connect over MBMS bearer

Pre-conditions:

- The MCDData clients 1 to n are registered and affiliated to the same MCDData group X.
- The MCDData server has decided to use an MBMS bearer for the MCDData service group communication associated with to the MCDData group X.

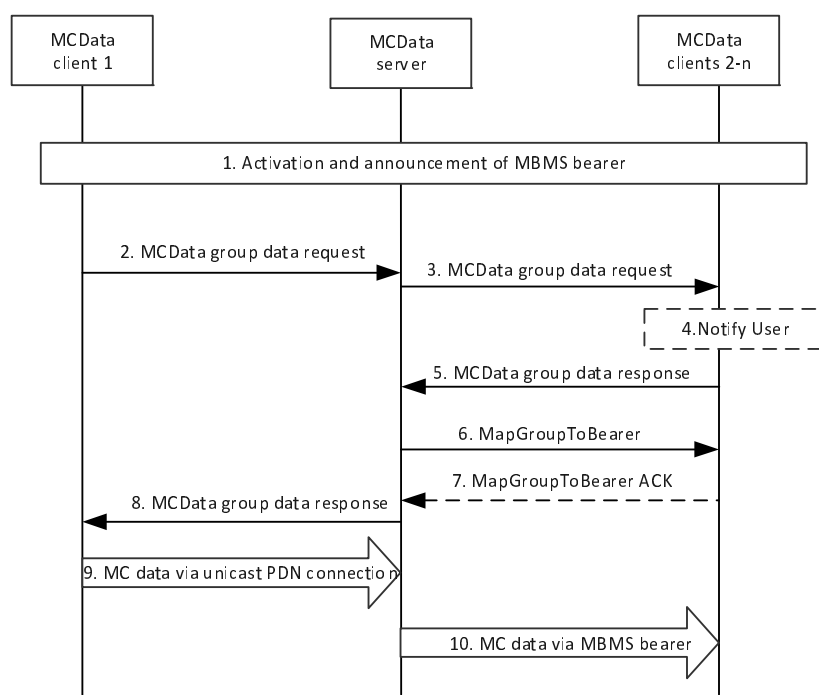


Figure 7.3.6.2.1-1: Group communication connect on MBMS bearer.

1. Activation and announcement of MBMS bearer availability.

NOTE 1: The procedure does not include the steps for MCDData client location reporting, or for MBMS capability information exchange.

2. The MCDData client 1 initiates a group communication by sending a MCDData group data request over a unicast PDN connection towards the MCDData server.
3. MCDData server initiates the MCDData group data request towards each MCDData clients 2 to n.
4. The receiving MCDData clients 2 to n optionally notify the user about the incoming MCDData session data request.
5. The receiving MCDData client 2 to n accept or reject the MCDData group data request and the corresponding result is in the MCDData group data response towards MCDData server.
6. The MCDData server will send a MapGroupToBearer message over a previously activated MBMS bearer to all users that will receive the communication over an MBMS bearer. The MapGroupToBearer message includes association information between the group communication and MBMS bearer. The MapGroupToBearer message includes MCDData group ID and information about the media stream identifier of the activated MBMS bearer and may include the identifier (i.e. the TMGI) of the MBMS bearer broadcasting the communication.
7. The MCDData clients 2 to n process the MapGroupToBearer information and may send a MapGroupToBearer Ack back to the MCDData server if required.

8. 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 2: The steps 3 to 5 and steps 6 to 7 can occur in any order, and prior to step 9 depending on the conditions to proceed with the data transmission.

9. MCDATA client 1 sends the MC data over uplink unicast PDN connection towards the MCDATA server.
10. The MCDATA server sends the MC data over the indicated stream within the associated MBMS bearer to the MCDATA clients 2 to n.

7.3.6.2.2 Group communication disconnect from MBMS bearer

Figure 7.3.6.2.2-1 shows the high level procedure where an UnmapGroupFromBearer message is sent by the MCDATA server to the MCDATA clients to indicate that the MCDATA group communication is being dissociated from the MBMS bearer.

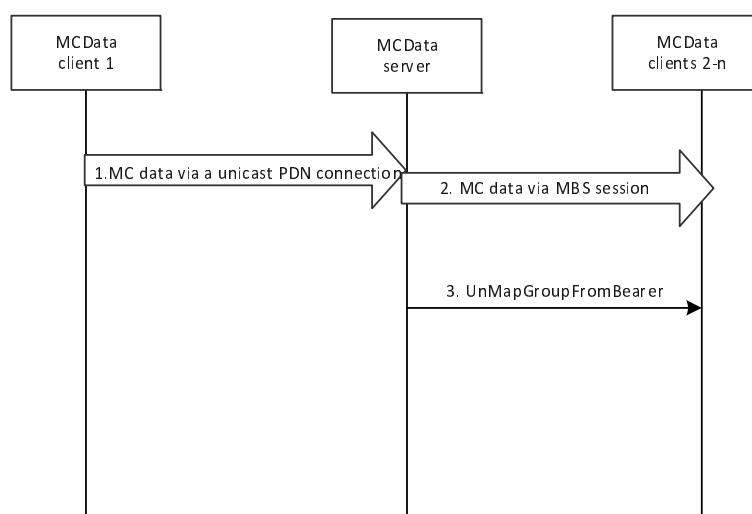


Figure 7.3.6.2.2-1: Group communication disconnect on MBMS bearer.

1. The MC group communication is taking place over MBMS bearer. MCDATA client 1 is sending the MC data over a unicast PDN connection to the MCDATA server.
2. The MCDATA server sends the MC data over the MBMS bearer to MCDATA clients 2 to n.
3. After the MC data transmission is over, i.e., no further data to be sent over the group communication, the MCDATA server sends an UnMapGroupFromBearer to de-associate the group communication from the MBMS bearer.

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 MCDData 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 MCDData system only.

7.4.2.1 Information flows for short data service

7.4.2.1.1 MCDData standalone data request

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

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

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData ID (see NOTE 1) | O | The identity of the MCDData user towards which the data is sent |
| Functional alias (see NOTE 1) | O | The associated functional alias of the MCDData user identity towards which the data is sent. |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData transaction to which the current transaction is a reply to |
| Emergency indicator | O | Indicates that the data request is for MCDData 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 MCDData user consumption |
| Location | O | Location of the Originating MCDData 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: At least one identity shall be present. If both are present the MCDData ID shall be used to route the request and the functional alias is just for information. | | |
| 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: MCDData standalone data request (MCDData server to MCDData client)

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| MCDData ID | M | The identity of the MCDData user towards which the data is sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData transaction to which the current transaction is a reply to |
| Emergency indicator | O | Indicates that the data request is for MCDData 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 MCDData client consumption |
| Location | O | Location of the Originating MCDData 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 |
| Object Identifier | O | If the message is stored in the Message Store of the user account, the object identifier generated by the Message Store is communicated to the MCDData client to use to retrieve this particular message in the Message Store. |
| 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 MCDData data disposition notification

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

Table 7.4.2.1.2-1: MCDData data disposition notification

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

7.4.2.1.3 MCDData standalone session data request

Table 7.4.2.1.3-1 describes the information flow for the MCDData standalone session data request sent from the MCDData client to the MCDData server and from the MCDData server to another MCDData 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: At least one identity shall be present. If both are present the MCDATA ID shall be used to route the request and the functional alias is just for information. | | |
| 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 MCDData standalone session data response

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

Table 7.4.2.1.4-1: MCDData standalone session data response

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user receiving data |
| MCDData ID | M | The identity of the MCDData 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 MCDData session data request

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

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

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData ID (see NOTE 1) | O | The identity of the MCDData user towards which the data is sent |
| Functional alias (see NOTE 1) | O | The associated functional alias of the MCDData user identity towards which the data is sent. |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData user consumption |
| Location | O | Location of the Originating MCDData 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: At least one identity shall be present. If both are present the MCDData ID shall be used to route the request and the functional alias is just for information. | | |
| 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: MCDData group standalone data request (MCDData client – MCDData server)

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData transaction to which the current transaction is a reply to |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData imminent peril communication |
| Disposition Type | O | Indicates the disposition type expected from the receiver (i.e., delivered or read or both) |
| MCDData ID list (see NOTE 4) | O | The specified MCDData users who should send a disposition notification message. |
| Payload Destination Type | M | Indicates whether the payload is for application consumption or MCDData user consumption |
| Location | O | Location of the Originating MCDData 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 MCDData group standalone data request (MCDData server – MCDData client)

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

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

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| MCDData ID | M | The identity of the MCDData user towards which the data is sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData transaction to which the current transaction is a reply to |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData imminent peril communication |
| Disposition Type | O | Indicates the disposition type expected from the receiver (i.e., delivered or read or both) |
| MCDData ID list (see NOTE 4) | O | The specified MCDData users who should send disposition notification message. |
| Payload Destination Type | M | Indicates whether the payload is for application consumption or MCDData user consumption |
| Location | O | Location of the Originating MCDData 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 MCDData data disposition notification (MCDData server – MCDData client)

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

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

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

7.4.2.1.9A MCDData aggregated data disposition notification

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

Table 7.4.2.1.9A-1: MCDData aggregated data disposition notification

| Information element | Status | Description |
|-------------------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData users who only reported the "read" disposition |
| Number of "Delivered" Notifications | O | Number of MCDData users who only reported the "delivered" disposition |
| Conversation Identifier | M | Identifies the conversation |
| Disposition association | M | Identity of the original MCDData transaction |
| "Read" MCDData ID list | O | List, partial or full, of MCDData users who only reported the "read" disposition |
| "Delivered" MCDData ID list | O | List, partial or full, of MCDData users who only reported the "delivered" disposition |

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

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

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

| Information element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData 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 MCDData user consumption |
| Location | O | Location of the Originating MCDData 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 MCDData group session standalone data request (MCDData server – MCDData client)

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

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

| Information element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| MCDData ID | M | The identity of the MCDData user towards which the data is sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData 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 MCDData user consumption |
| Location | O | Location of the Originating MCDData 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 MCDData group session standalone data response

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

Table 7.4.2.1.12-1: MCDData group session standalone data response

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

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

Table 7.4.2.1.13-1 describes the information flow for the MCDData group data request sent from the MCDData client to the MCDData 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: MCDData one-to-one SDS communication upgrade request

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

7.4.2.1.17 MCDData one-to-one SDS communication upgrade response

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

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

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

7.4.2.1.18 MCDData group SDS communication upgrade request

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

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

| Information element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending upgrade request |
| Functional alias | O | The associated functional alias of the MCDData user sending data or receiving data. |
| MCDData group ID | M | The MCDData 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 MCDData 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 MCDData 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: MCDData group SDS communication upgrade request (MCDData server to MCDData client)

| Information element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending upgrade request |
| Functional alias | O | The associated functional alias of the MCDData user sending data or receiving data. |
| MCDData group ID | M | The MCDData group ID on which the emergency upgrade request is made |
| MCDData ID | M | The identity of the MCDData user receiving the upgrade request |
| Conversation Identifier | M | Identifies the conversation |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData 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 MCDData group SDS communication upgrade response

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

Table 7.4.2.1.19-1: MCDData group SDS communication upgrade response

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

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

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

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

| Information Element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the cancelling party |
| MCDData group ID | M | The MCDData group ID on which the MCDData in-progress emergency state is to be cancelled. |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData 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 MCDData group SDS communication in-progress priority state cancel request (MCDData server to MCDData client)

| Information Element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the cancelling party |
| MCDData group ID | M | The MCDData group ID on which the MCDData in-progress emergency state is to be cancelled. |
| MCDData ID | M | The identity of the recipient MCDData user |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData 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 MCDData group SDS communication in-progress priority state cancel response

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

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

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

7.4.2.1.22 MCDData functional alias resolution response

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

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

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

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

7.4.2.2.1 General

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

7.4.2.2.2 Procedure

The procedure in figure 7.4.2.2.2-1 describes the case where an MCDData user is initiating one-to-one MCDData data communication for sending standalone SDS data to other MCDData 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. MCDData users on MCDData client 1 and MCDData client 2 are already registered for receiving MCDData service.
3. MCDData client 1 and MCDData client 2 belong to the same MCDData system.
4. Optionally, the MCDData client may have activated functional alias to be used.
5. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

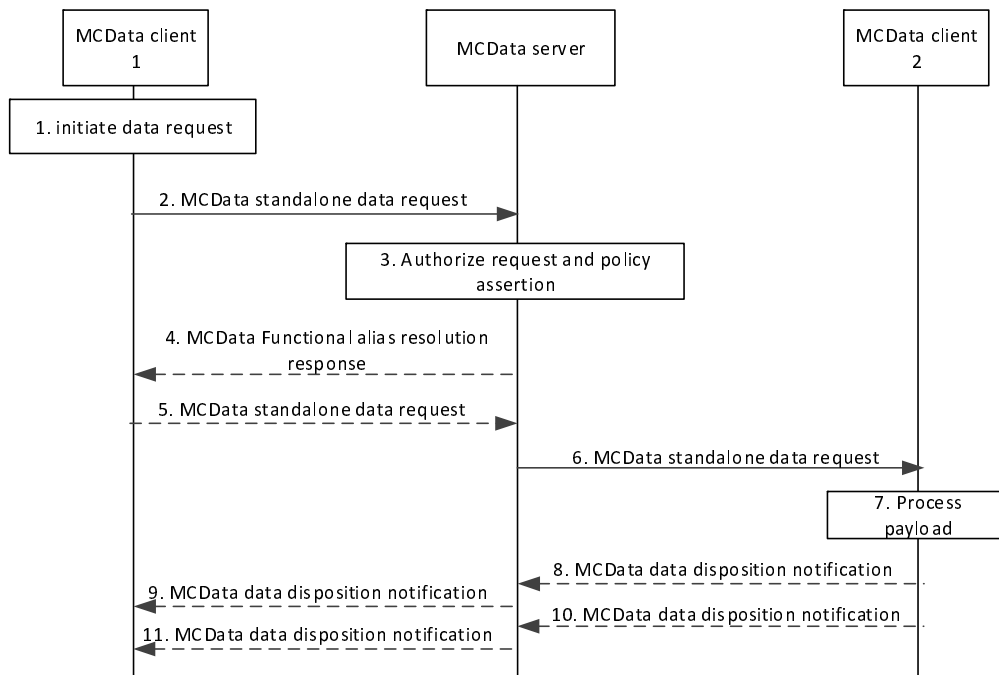


Figure 7.4.2.2.2-1: One-to-one standalone short data service using signalling control plane

1. The user at MCDData client 1 initiates an SDS data transfer for the chosen MCDData user.
2. MCDData client 1 sends a MCDData standalone data request towards the MCDData server. The MCDData standalone data request contains conversation identifier for message thread indication. The MCDData standalone data request may include additional implementation specific information in the application metadata container. The MCDData standalone data request may contain disposition request if indicated by the user at MCDData client 1. MCDData user at MCDData client 1 may include a functional alias within the SDS data transfer and addresses the target MCDData client 2 using a functional alias.
 - a) If the MCDData user at the MCDData client 1 initiates an MCDData emergency short data service communication or MCDData emergency state is already set for the MCDData client 1 (due to previously triggered MCDData emergency alert):
 - i) The MCDData standalone data request shall contain emergency indicator; and
 - ii) If MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCDData emergency state of MCDData client 1 is retained until explicitly cancelled by the user of MCDData client 1.

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

3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData standalone data request. MCDData server verifies whether the provided functional alias of MCDData client 1, if present, can be used and has been activated for the user. The MCDData 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 MCDData user, the MCDData server resolves the functional alias to the corresponding MCDData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6. The MCDData server allows only two participating MCDData clients for a standalone short data service.

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

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

4. The MCDData server responds back to MCDData client 1 with a functional alias resolution response message that contains the resolved MCDData ID.
5. If the MCDData server replies with a MCDData functional alias resolution response message, the MCDData client 1 assumes the MCDData standalone data request in step 2 is rejected and sends a new MCDData standalone data request towards the resolved MCDData ID.
6. MCDData server initiates the MCDData standalone data request towards the MCDData user that is determined based on step 3. The MCDData standalone data request towards the MCDData user contains the emergency indicator if it is present in the received MCDData standalone data request from MCDData client 1.

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

7. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData 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 MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.
8. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client initiates a MCDData data disposition notification for delivery report. The MCDData data disposition notification from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
9. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.
10. If the MCDData data disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData data disposition notification for read report. The MCDData data disposition notification from MCDData client 2 may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
11. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.

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

7.4.2.3.1 General

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

7.4.2.3.2 Procedure

The procedure in figure 7.4.2.3.2-1 describes the case where an MCDData user is initiating one-to-one MCDData data communication for sending standalone SDS data to other MCDData 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. MCDData users on MCDData client 1 and MCDData client 2 are already registered for receiving MCDData service.
2. MCDData client 1 and MCDData client 2 belong to the same MCDData system.
3. Optionally, the MCDData client may have an activated functional alias to be used.
4. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

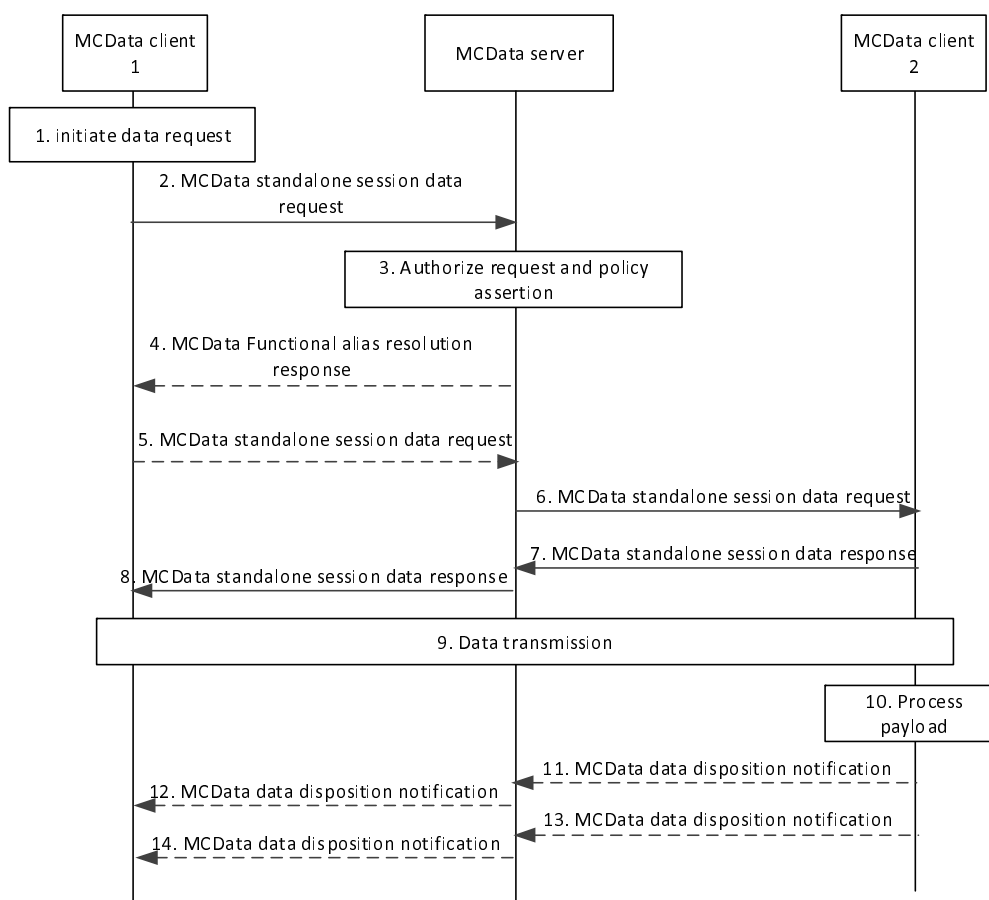


Figure 7.4.2.3.2-1: One-to-one standalone short data service using media plane

1. User at MCDData client 1 would like to initiate an SDS data transfer request for the chosen MCDData user.
2. MCDData client 1 sends a MCDData standalone session data request towards the MCDData server. The MCDData standalone session data request contains one MCDData user for one-to-one data communication as selected by the user at MCDData client 1. The MCDData standalone session data request contains conversation identifier for message thread indication. The MCDData standalone session data request may include additional implementation specific information in the application metadata container. The MCDData data request may contain disposition request if indicated by the user at MCDData client 1. MCDData user at MCDData client 1 may include a functional alias within the SDS data transfer and addresses the target MCDData client 2 using a functional alias.
 - a) If the MCDData user at the MCDData client 1 initiates an MCDData emergency short data service communication or MCDData emergency state is already set for the MCDData client 1 (due to previously triggered MCDData emergency alert):

- i) The MCDData standalone session data request shall contain emergency indicator; and
- ii) If MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCDData emergency state of MCDData client 1 is retained until explicitly cancelled by the user of MCDData client 1.

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

3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData standalone session data request. MCDData server verifies whether the provided functional alias of MCDData client 1, if present, can be used and has been activated for the user. The MCDData 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. MCDData server determines the eligible MCDData user(s) after policy assertion for sending the MCDData standalone session data request. If functional alias is used to address that target MCDData user, the MCDData server resolves the functional alias to the corresponding MCDData 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 MCDData IDs/MCDData users that share this functional alias. The MCDData server allows only two participating MCDData clients for a standalone short data service.

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

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

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

5. If the MCDData server replies with a MCDData functional alias resolution response message, the MCDData client 1 abandons the MCDData standalone session data request in step 2 and sends a new MCDData standalone session data request towards the resolved MCDData ID.

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

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

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

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

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

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

10. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData 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 MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.

11. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client initiates a MCDData data disposition notification for delivery report. The MCDData data disposition

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

12. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.
13. If the MCDData disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData disposition notification for read report. The MCDData data disposition notification from MCDData client 2 may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
14. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.

7.4.2.4 One-to-one short data service session

7.4.2.4.1 General

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

7.4.2.4.2 Procedure

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

Pre-conditions:

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

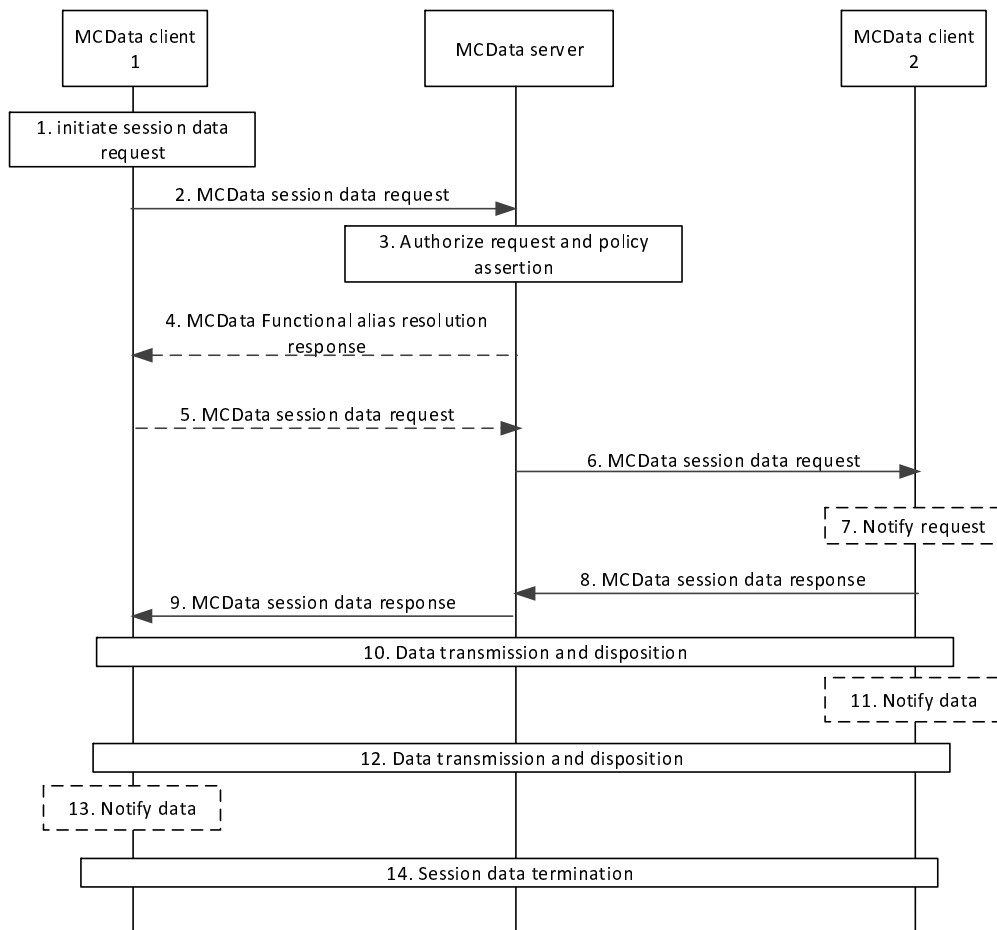


Figure 7.4.2.4.2-1: One-to-one short data service session

1. User at MCDData client 1 would like to initiate an SDS data communication session request for the chosen MCDData user.
2. MCDData client 1 sends a MCDData session data request towards the MCDData server. The MCDData session data request contains one MCDData user for one-to-one data communication as selected by the user at MCDData client 1. The MCDData session data request contains conversation identifier for message thread indication. The MCDData session data request may include additional implementation specific information in the application metadata container. MCDData user at MCDData client 1 may include a functional alias within the SDS data transfer and addresses the target MCDData client 2 using a functional alias.
 - a) If the MCDData user at the MCDData client 1 initiates an MCDData emergency short data service communication or MCDData emergency state is already set for the MCDData client 1 (due to previously triggered MCDData emergency alert):
 - i) The MCDData session data request shall contain emergency indicator; and
 - ii) If MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCDData emergency state of MCDData client is retained until explicitly cancelled by the user of MCDData client 1.

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

3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData session data request. The MCDData 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. MCDData server determines the eligible MCDData user(s) after policy assertion for sending the MCDData session data request. MCDData server also verifies whether the provided functional alias of MCDData client 1, if present, can be used and has been activated for the user. If functional alias is used to address that target MCDData user, the MCDData server resolves the functional alias to the corresponding MCDData 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 abandons the MCDATA session data request in step 2 and 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. MCDData users on MCDData clients 1 to n belong to the same group and are already registered for receiving MCDData service and affiliated.
2. Optionally, the MCDData client may have activated functional alias to be used.
3. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

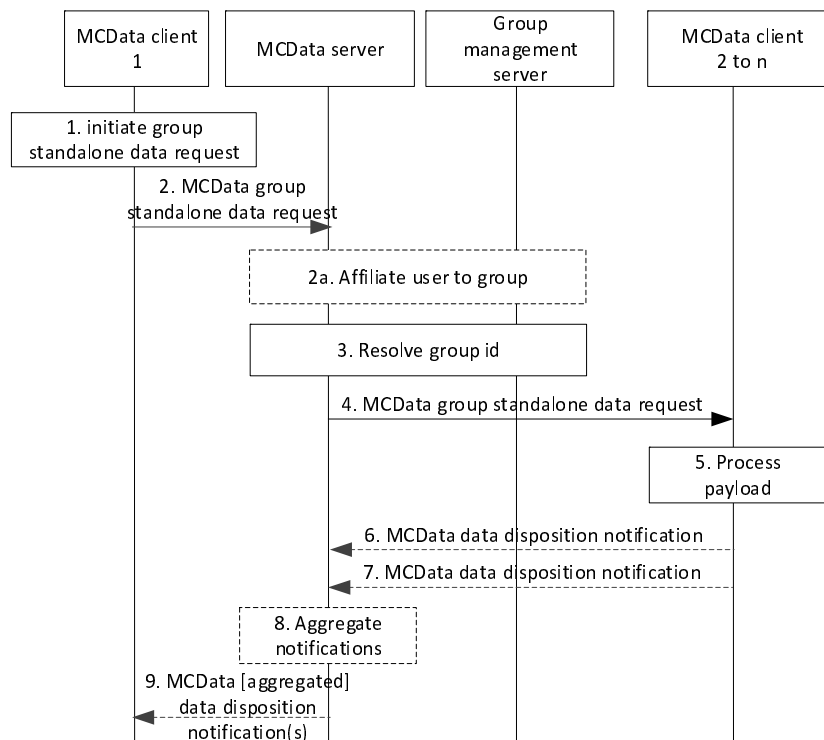


Figure 7.4.2.5.2-1: Group standalone SDS using signalling control plane

1. The user at MCDData client 1 initiates an SDS data transfer to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group standalone data request towards the MCDData server. The MCDData group data request contains MCDData group ID as selected by the user at MCDData client 1. The MCDData group standalone data request contains conversation identifier for message thread indication. The MCDData session data request may include additional implementation specific information in the application metadata container. The MCDData group standalone data request may contain disposition request if indicated by the user at MCDData client 1. MCDData user at MCDData client 1 may include a functional alias within the SDS data transfer.

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

- i) the MCDData group standalone data request shall contain an emergency indicator;
- ii) the MCDData group standalone data request shall set an alert indicator if configured to send an MCDData emergency alert while initiating an MCDData standalone data request for the emergency short data service communication;
- iii) if the MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCPTT emergency state is retained until explicitly cancelled; and

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

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

- i) the MCDData group standalone data request shall contain imminent peril indicator; and
 - ii) once an MCDData imminent peril communication has been initiated, the MCDData 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 MCDData group standalone data request, the MCDData server implicitly affiliates MCDData client 1 to the MCDData group if the client is not already affiliated.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData group standalone data request. The MCDData server resolves the MCDData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCDData 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. MCDData 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 MCDData group standalone data request and if the MCDData group is not in the in-progress emergency state, the MCDData 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 MCDData group standalone data request and if the MCDData group is not in the in-progress imminent peril state, the MCDData group is considered to be in the in-progress imminent peril state until cancelled.
4. MCDData server initiates the MCDData group standalone data request towards each MCDData client determined in Step 3. The MCDData ID list shall not be included in a unicast downlink delivery to an individual MCDData client. The Disposition Type IE shall not be included in a unicast downlink delivery to MCDData clients who are not in the MCDData ID list in step 2. The MCDData group standalone data request towards each MCDData client contains:
- i) an emergency indicator, if it is present in the received MCDData group standalone data request from the MCDData client 1;
 - ii) an imminent peril indicator, if it is present in the received MCDData group standalone data request from the MCDData client 1; and
 - iii) an alert indicator, if requested to initiate an emergency alert in the received MCDData group standalone data request from the MCDData client 1.
5. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData clients 2 to n may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData 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 MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.
6. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client(s) initiates a MCDData data disposition notification for delivery report.
7. If the MCDData data disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData data disposition notification for read report.
- NOTE 1: On receiving MCDData group standalone data request over MBMS, the receiving MCDData client(s) shall check if the MCDData ID list IE is included the receiving MCDData client shall check if its own MCDData ID is in the list. If not, step 6 and 7 are not required.
8. The MCDData data disposition notification(s) from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users. The MCDData data disposition notification(s) from each MCDData user may be aggregated.

9. Aggregated or individual MCDData data disposition notification(s) is sent to the disposition requesting user at MCDData 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 MCDData user is initiating group standalone MCDData data communication with or without disposition request to a group.

Pre-conditions:

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

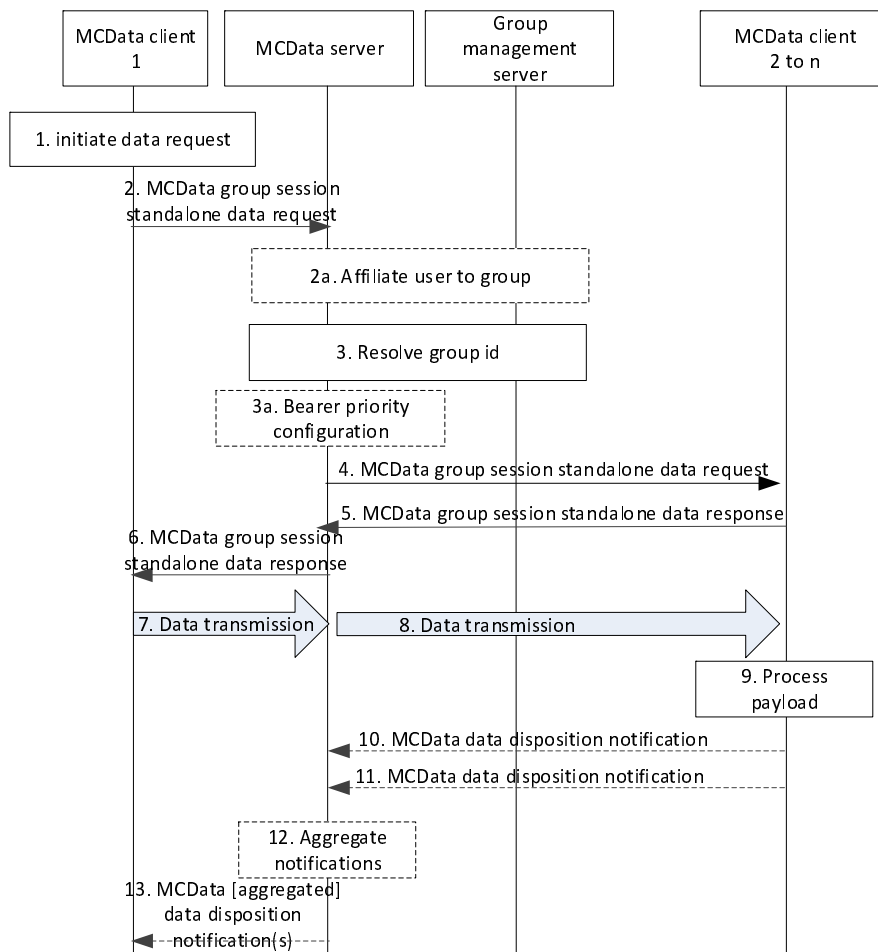


Figure 7.4.2.6.2-1: Group standalone SDS using media plane

1. User at MCDData client 1 would like to initiate a SDS data transfer request to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group session standalone data request towards the MCDData server. The MCDData group session standalone data request contains target recipient(s) as selected by the user at MCDData client 1. The MCDData session group standalone data request contains conversation identifier for message thread indication. The MCDData session group standalone data request may include additional implementation specific information in the application metadata container. The MCDData session group standalone data request may contain disposition request if indicated by the user at MCDData client 1. MCDData user at MCDData client 1 may include a functional alias within the SDS data transfer.

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

- i) the MCDData group session standalone data request shall contain an emergency indicator;
- ii) the MCDData group session standalone data request shall set the alert indicator if configured to send an MCDData emergency alert while initiating an MCDData standalone data request for the emergency short data service communication;
- iii) if the MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCPTT emergency state is retained until explicitly cancelled; and
- iv) once an MCDData emergency communication has been initiated, the MCDData group is considered to be in an in-progress emergency state until cancelled.

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

- i) the MCDData group session standalone data request shall contain an imminent peril indicator; and
 - ii) once an MCDData imminent peril communication has been initiated, the MCDData 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 MCDData group session standalone data request, the MCDData server implicitly affiliates MCDData client 1 to the MCDData group if the client is not already affiliated.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData session group standalone data request. The MCDData server resolves the MCDData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCDData 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. MCDData 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 MCDData group session standalone data request and if the MCDData group is not in the in-progress emergency state, the MCDData 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 MCDData group session standalone data request and if the MCDData group is not in the in-progress imminent peril state, the MCDData group is considered to be in the in-progress imminent peril state until cancelled.
- 3a. The MCDData server configures the priority of the underlying bearers for all participants in the MCDData group.
4. MCDData server initiates the MCDData group session standalone data request towards each MCDData user determined in Step 3. The MCDData ID list shall not be included in a unicast downlink delivery to an individual MCDData client. The Disposition Type IE shall not be included in a unicast downlink delivery to MCDData clients who are not in the MCDData ID list in step 2. The MCDData group session standalone data request towards each MCDData client contains:
- i) an emergency indicator, if it is present in the received MCDData group session standalone data request from the MCDData client 1;
 - ii) an imminent peril indicator, if it is present in the received MCDData group session standalone data request from the MCDData client 1; and
 - iii) an alert indicator, if requested to initiate an emergency alert in the received MCDData group session standalone data request from MCDData client 1.
5. The receiving MCDData clients 2 to n automatically accepts the MCDData group session standalone data request and responds with MCDData group standalone data response towards MCDData server.
6. MCDData server forwards the MCDData clients 2 to n accepted response to the MCDData user initiating the MCDData 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. MCDData client 1 and MCDData server have successfully established media plane for data communication and the MCDData client 1 transmits the SDS data.
8. MCDData server distributes the data received from MCDData client 1 to MCDData clients 2 to n over the established media plane. After completion of the MCDData transfer from MCDData client 1, media plane resources associated to the data communication are released.
- NOTE 2: MCDData server is not required to wait for the complete reception of SDS data from MCDData client 1 prior to initiating transmission to MCDData client 2 to n.
9. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 to n may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData 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 MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.

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

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

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

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

13. Aggregated or individual MCDData data disposition notification(s) is sent to the disposition requesting user at MCDData 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 MCDData user is initiating SDS data communication session with an MCDData group for exchanging SDS data transactions between the group participants, with or without disposition request, using MCDData-SDS-1 and MCDData-SDS-2 reference points.

Pre-conditions:

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

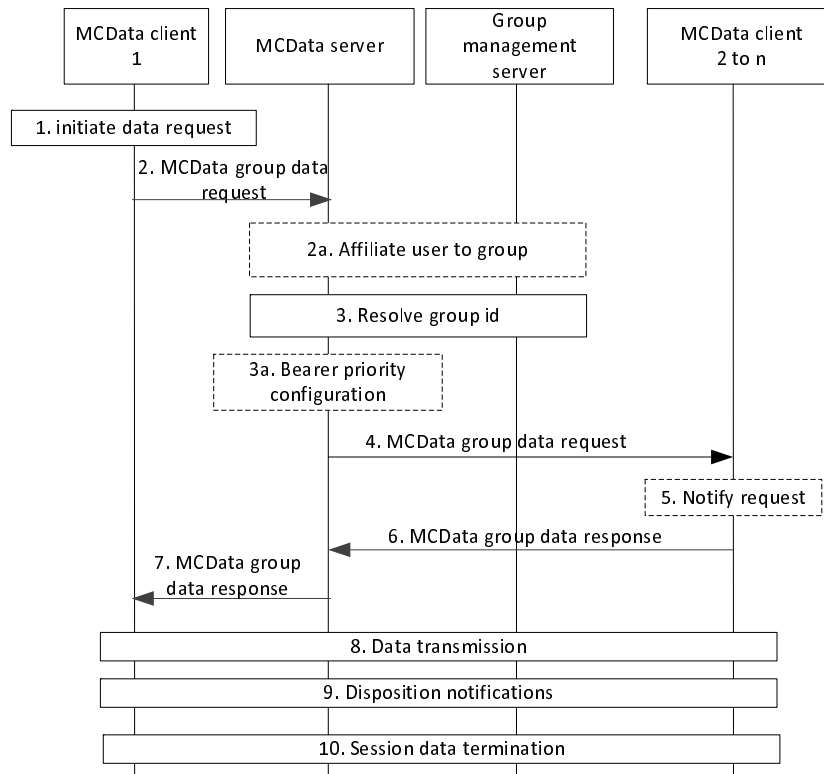


Figure 7.4.2.7.2-1: Group SDS session

1. User at MCDData client 1 would like to initiate a SDS group data transfer request to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group data request towards the MCDData server. The MCDData group data request contains MCDData group ID as selected by the user at MCDData client 1. The MCDData session data request contains conversation identifier for message thread indication. The MCDData group data request may include additional implementation specific information in the application metadata container. MCDData user at MCDData client 1 may include a functional alias within the SDS data transfer.

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

- i) the MCDData group data request shall contain an emergency indicator;
- ii) the MCDData group data request shall set an alert indicator if configured to send an MCDData emergency alert while initiating an MCDData standalone data request for the emergency short data service communication; and
- iii) if MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCPTT emergency state of MCDData client 1 is retained until explicitly cancelled by the user of MCDData client 1.

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

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

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

- 2a. If either emergency indicator or imminent peril indicator is present in received MCDData group data request, the MCDData server implicitly affiliates MCDData client 1 to the MCDData group if the client is not already affiliated.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData group data request. The MCDData server resolves the MCDData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCDData 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. MCDData 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 MCDData group data request and if MCDData group is not in in-progress emergency state, the MCDData group is considered to be in the in-progress emergency state until cancelled;

NOTE 2: While the MCDData group is in the in-progress emergency state, all types of MCDData communications within the group are processed as emergency group communications by the MCDData server. MCDData 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 MCDData group data request and if the MCDData group is not in the in-progress imminent peril, the MCDData group is considered to be in the in-progress imminent peril state until cancelled;

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

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

- i) an emergency indicator if it is present in the received MCDData group data request from the MCDData client 1;
 - ii) an imminent peril indicator if it is present in the received MCDData group data request from the MCDData client 1; and
 - iii) an alert indicator if requested to initiate an emergency alert in the received MCDData group data request from MCDData client 1;

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

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

7. MCDData server forwards the MCDData group data response received from MCDData client 2 to n to the MCDData user initiating the MCDData 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. MCDData client 1 and the MCDData group data request accepted clients have successfully established media plane for data communication and either MCDData client can transmit SDS data. The MCDData data request may contain disposition request if indicated by the client sending data. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the SDS data receiving MCDData users may be notified, otherwise those MCDData users shall not be notified.

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

10. Based on the MCDData 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 MCDData one-to-one SDS communication to an MCDData 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 MCDData user is upgrading an ongoing MCDData one-to-one SDS communication to an MCDData emergency one-to-one SDS communication. This procedure is applicable only when MCDData 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 MCDData one-to-one SDS communication belong to the same MCDData system.
2. MCDData one-to-one SDS communication is already in progress.

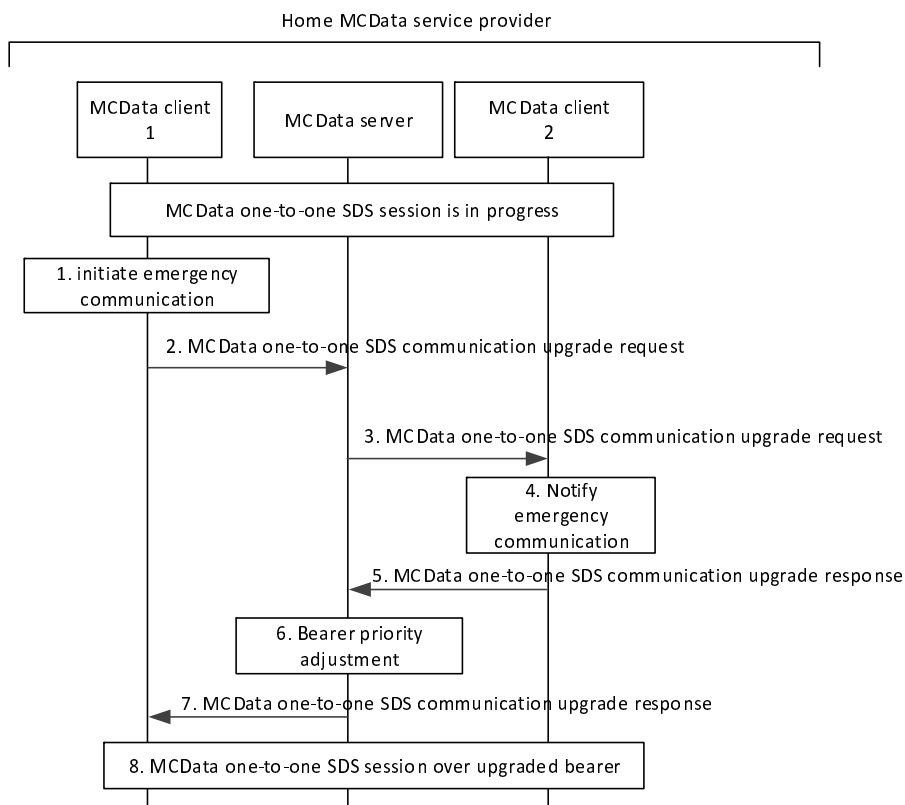


Figure 7.4.2.8.2-1 MCDData one-to-one SDS communication upgraded to MCDData emergency one-to-one SDS communication

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

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

2. MCDData client 1 requests the MCDData server to upgrade the one-to-one MCDData SDS communication to in-progress emergency by sending a MCDData one-to-one SDS communication upgrade request.
3. The MCDData server sends the MCDData one-to-one SDS communication upgrade request towards MCDData client 2, the MCDData client of the other participant.

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

4. The MCDData user is notified of the in-progress emergency of the MCDData emergency one-to-one SDS communication.
5. The receiving MCDData client acknowledges the MCDData one-to-one SDS communication upgrade request and sends MCDData one-to-one SDS communication upgrade response to the MCDData server.
6. The MCDData server adjusts the priority of the underlying bearer for both participants of the MCDData one-to-one SDS communication. The priority is retained until the communication session ends.
7. The MCDData server sends MCDData one-to-one SDS communication upgrade response to MCDData client 1.
8. MCDData client 1 and MCDData client 2 continue with the MCDData one-to-one SDS communication, which has been transformed into an MCDData 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 MCDData group SDS communication to an MCDData 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 MCDData user is upgrading an ongoing MCDData group SDS communication to an MCDData emergency group SDS communication. This procedure is applicable only when group MCDData 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 MCDData server is shown in place of a user home MCDData server and a group hosting MCDData server.

Pre-conditions:

1. The MCDData group is previously defined on the group management server with MCDData client 1, MCDData client 2 and MCDData client 3 affiliated to that MCDData group.
2. All members of the MCDData group belong to the same MCDData system.
3. MCDData group SDS communication is already in progress.
4. The initiating MCDData client 1 has been configured to send an MCDData emergency alert when upgrading an MCDData emergency group communication.

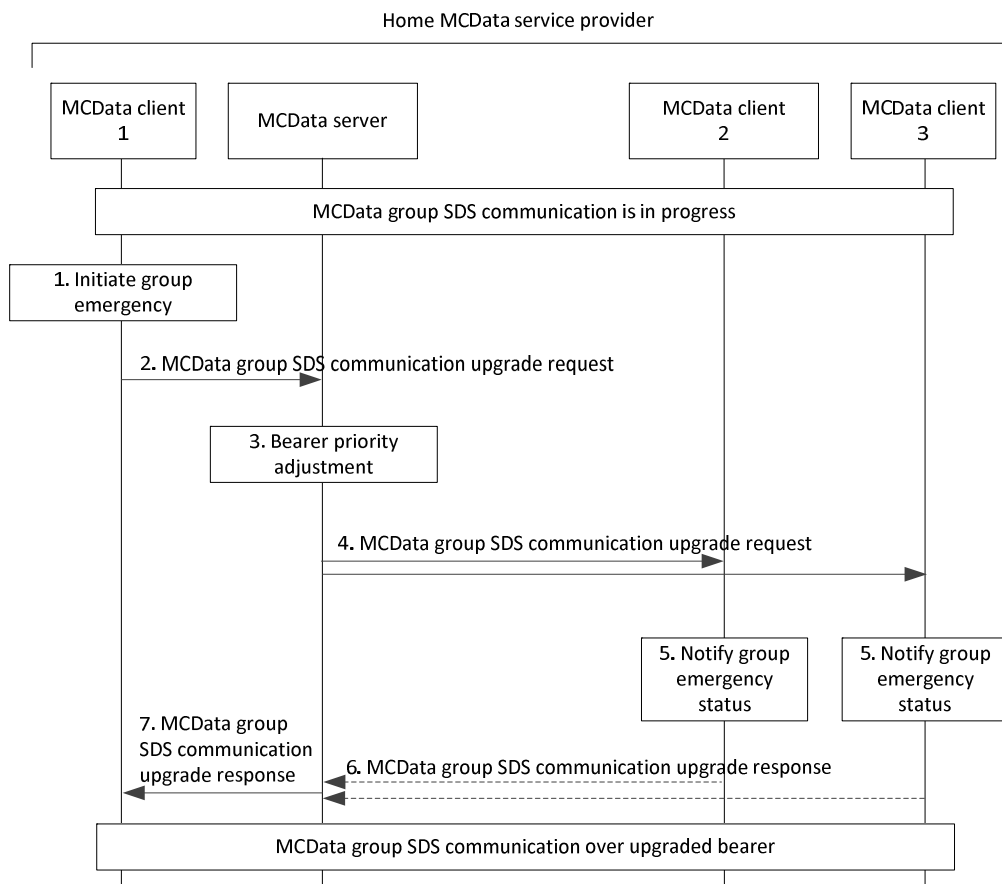


Figure 7.4.2.9.2-1: MCDATA group SDS communication upgraded to MCDATA emergency group SDS communication

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. MCDData users are notified of the in-progress emergency state of the MCDData group.
6. The receiving MCDData clients send the MCDData group SDS communication upgrade response to the MCDData server to acknowledge the MCDData group emergency request. For a multicast call, these acknowledgements are not sent.
7. The MCDData server sends the MCDData group SDS communication upgrade response to the MCDData 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.

MCDData client 1, MCDData client 2 and MCDData client 3 continue with the MCDData group SDS communication, which has been transformed into an MCDData 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 MCDData 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 MCDData user cancels MCDData group's in-progress emergency.

Pre-conditions:

1. The MCDData group is previously defined on the group management server with MCDData client 1, MCDData client 2 and MCDData client 3 affiliated to that MCDData group.
2. All members of the MCDData group belong to the same MCDData system.
3. MCDData group members have been notified about the in-progress emergency.
4. The MCDData group is in the in-progress emergency state and has prioritized bearer support.
5. MCDData client 1 previously initiated the in-progress emergency for the group.

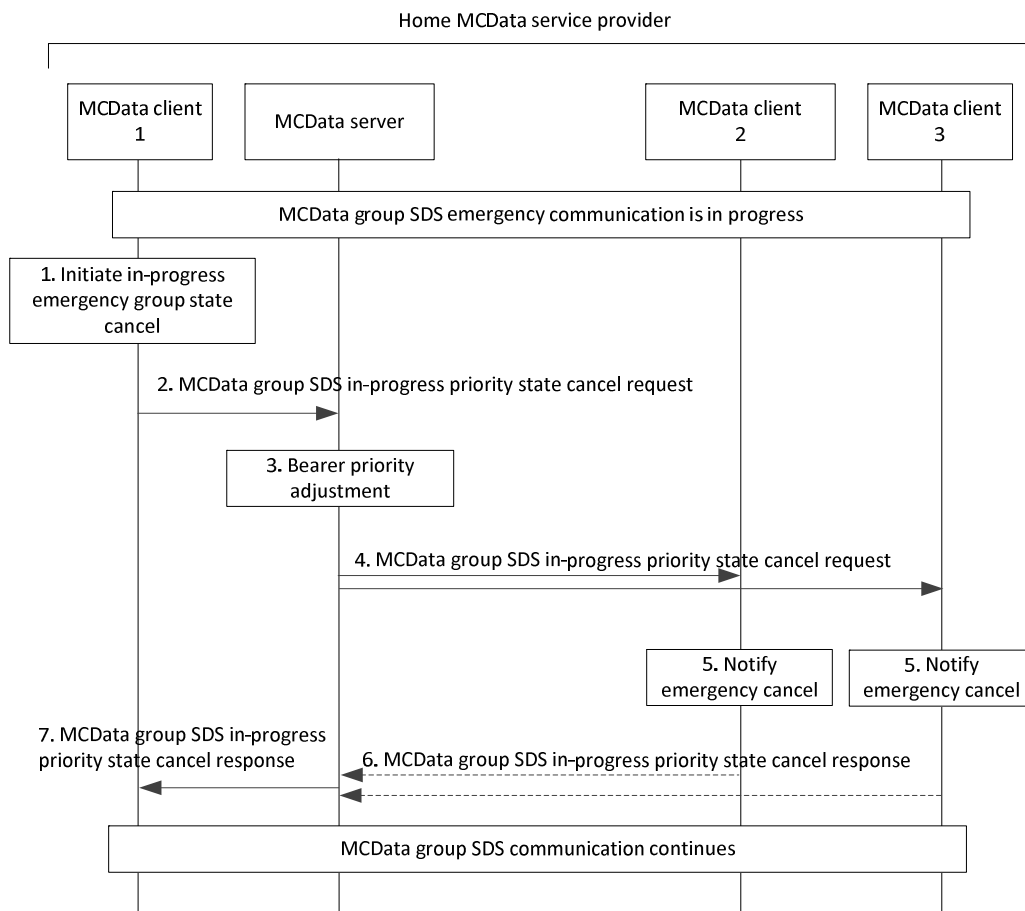


Figure 7.4.2.10.2-1: MCDATA group SDS in-progress emergency group state cancel

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 MCDData clients send the MCDData group SDS in-progress priority state cancel response to the MCDData server to acknowledge the MCDData in-progress emergency group state cancel. For a multicast call scenario, these acknowledgements are not sent.
7. The MCDData server sends the MCDData group SDS in-progress priority state cancel response to the MCDData user 1 to confirm the MCDData in-progress emergency group state cancel. If the MCDData in-progress emergency group state cancel request (in step 2) contained the "Alert indicator" IE, the MCDData 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 MCDData 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 MCDData 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 MCDData 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), MCDData users are notified of the in-progress imminent peril state of the MCDData 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 MCDData 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 MCDData client 1 sets imminent peril indicator; and
- In step 5), MCDData 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 MCDData group conversation

7.4.2.13.1 General

The MCDData service shall support mechanisms that allow a MCDData 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 MCDData user joins the group conversation.

7.4.2.13.2 Procedure

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

Pre-conditions:

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

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

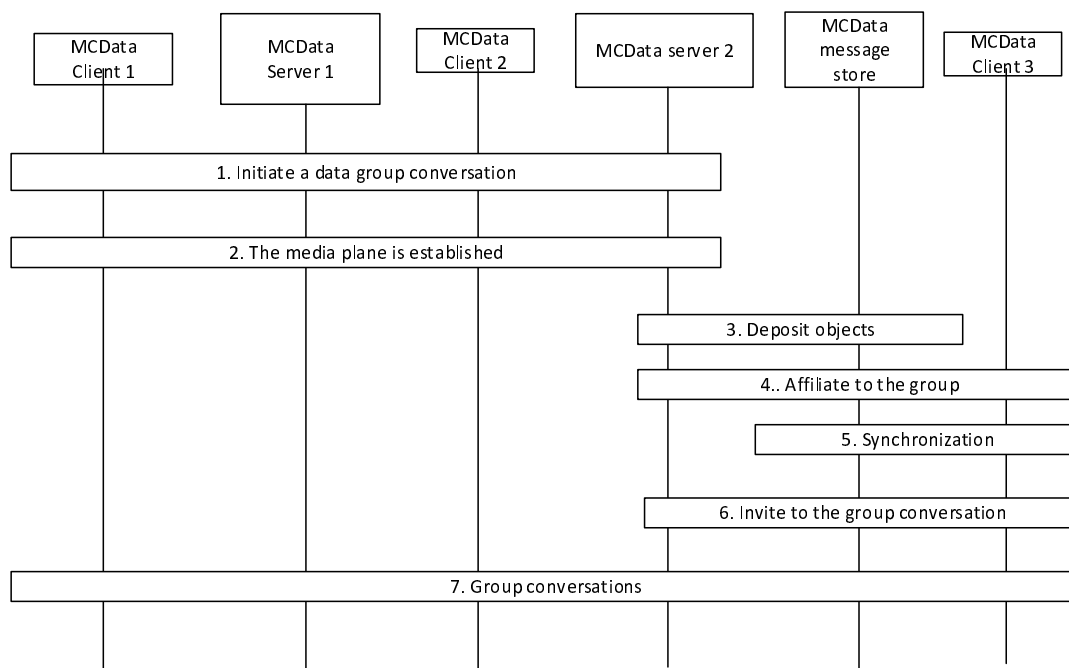


Figure 7.4.2.13.2-1: Providing data for a user entering an ongoing MCDData group conversation

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 MCDData user 3 is not affiliated at this time, MCDData server 2 accepts the invitation to the group conversation on behalf of MCDData user 3.
2. The media plane is established for the group conversation. MCDData server 2 is in the media plane to receive the conversation on behalf of MCDData user 3.
3. MCDData server 2 stores the received conversation to MCDData user 3 account in the MCDData message store.

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

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

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

Table 7.4.3.2.1-1: MCDData standalone data request

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| MCDData ID | M | The identity of the MCDData 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 MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData communication is an MCDData emergency communication |
| Payload Destination Type | M | Indicates whether the payload is for application consumption or MCDData 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 MCDData 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 MCDData data disposition notification

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

Table 7.4.3.2.2-1: MCDData data disposition notification

| Information element | Status | Description |
|--------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user towards which the notification is sent |
| MCDData ID | M | The identity of the MCDData user sending notification |
| Conversation Identifier | M | Identifies the conversation |
| Reply Identifier | M | Identifies the original MCDData 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 MCDData user consumption |

7.4.3.2.3 MCDData group standalone data request

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

Table 7.4.3.2.3-1: MCDData group standalone data request

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| MCDData group ID | M | The MCDData 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 MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData communication is an MCDData emergency communication |
| Imminent peril indicator (see NOTE 1) | O | Indicates that the MCDData communication is an MCDData imminent peril communication |
| Payload Destination Type | M | Indicates whether the payload is for application consumption or MCDData 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 MCDData user in off-network.

7.4.3.3.2 Procedure

Figure 7.4.3.3.2-1 describes procedures for an off-network MCDData client 1 initiating one-to-one MCDData data communication for sending standalone SDS data to other MCDData 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. MCDData user 1 has initiated communication for sending standalone SDS data to other MCDData user 2.
2. MCDData client 1 and MCDData client 2 are members of the same ProSe Discovery group and are ProSe 1:1 direct communication capable.
3. MCDData client 1 has discovered MCDData client 2 in proximity, associated with MCDData user B, using ProSe Discovery procedures.

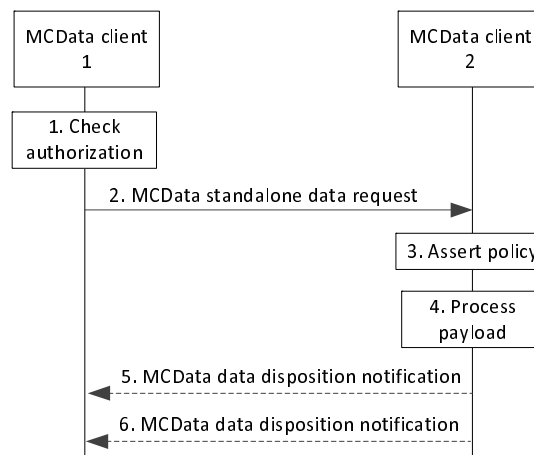


Figure 7.4.3.3.2-1: One-to-one standalone short data service using signalling control plane

1. MCDData client 1 checks whether the MCDData user 1 is authorized to send MCDData standalone data request.
2. If MCDData user 1 is authorised MCDData client 1 sends a MCDData standalone data request towards the MCDData client 2. The MCDData standalone data request contains conversation identifier for message thread indication. The MCDData standalone data request may include additional implementation specific information in the application metadata container. The MCDData standalone data request may contain disposition request if indicated by the user at MCDData client 1. If MCDData user at the MCDData client 1 initiates an MCDData emergency communication, then emergency indicator is included in the MCDData standalone data request. If an MCDData emergency state is not set already when MCDData emergency communication is initiated, the MCDData client 1 sets its MCDData emergency state and is retained until explicitly cancelled. The value of ProSe Per Packet Priority is upgraded according to the state of the MCDData communication.
3. On receiving a MCDData standalone data request, the MCDData 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 MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData 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 MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData 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 MCDData client 2 sends an appropriate notification to MCDData client 1.

5. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client 2 initiates a MCDData data disposition notification for delivery report.
6. If the MCDData data disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData 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 MCDData 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 MCDData client 1 initiating group MCDData data communication for sending SDS data to a MCDData group, with or without disposition request. The SDS data size limit is pre-configured.

Pre-conditions:

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

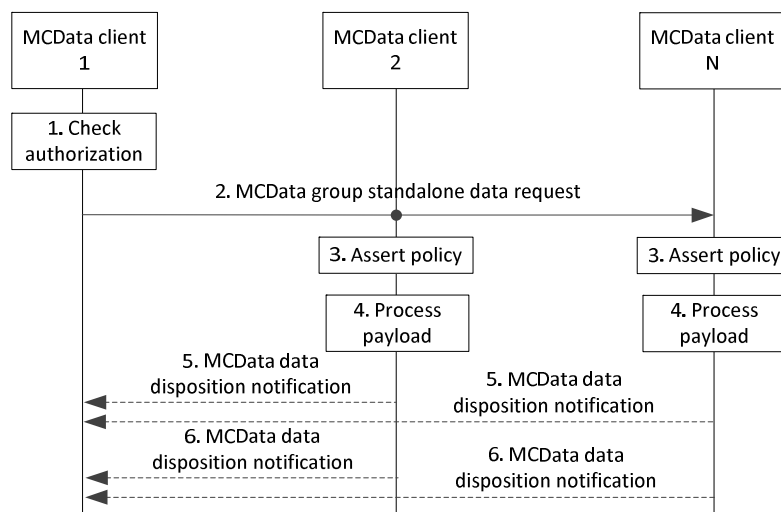


Figure 7.4.3.4.2-1: Group standalone short data service using signalling control plane

1. MCDData client 1 checks whether the MCDData user 1 is authorized to send MCDData group standalone data request.
2. If MCDData user 1 is authorised MCDData client 1 sends a MCDData group standalone data request towards the MCDData group. The MCDData group standalone data request contains conversation identifier for message thread indication. The MCDData group standalone data request may include additional implementation specific information in the application metadata container. The MCDData group standalone data request may contain disposition request if indicated by the user at MCDData client 1. If MCDData group standalone data request contains disposition request, MCDData group standalone data request shall also contain the IP address of the MCDData client 1. If MCDData user at the MCDData client 1 initiates an MCDData emergency communication, then the emergency indicator or the imminent peril indicator is included in the MCDData standalone data request. If an MCDData emergency state is not set already when MCDData emergency communication is initiated, the MCDData client 1 sets its MCDData emergency state and is retained until explicitly cancelled. The value of ProSe Per Packet Priority is upgraded according to the state of the MCDData communication.
3. On receiving a MCDData group standalone data request, the MCDData 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 MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData 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 MCDData clients 2 to N which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData clients 2 to N to start the local non-MCDData 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 MCDData clients sends an appropriate notification to MCDData client 1.

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

7.4.3.5 Void

7.4.3.6 Group standalone short data service with MCDData message store

7.4.3.6.1 General

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

7.4.3.6.2 Procedure

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

Pre-conditions:

1. MCDData user 1 to N are in an off-network group communication.
2. Information for ProSe direct communications corresponding to the MCDData group and its mapping to ProSe Layer-2 Group ID are pre-configured to MCDData client 1 to N.
3. MCDData client 1 to N are members of the same MCDData group.
4. MCDData user 2 has an account in the MCDData message store.

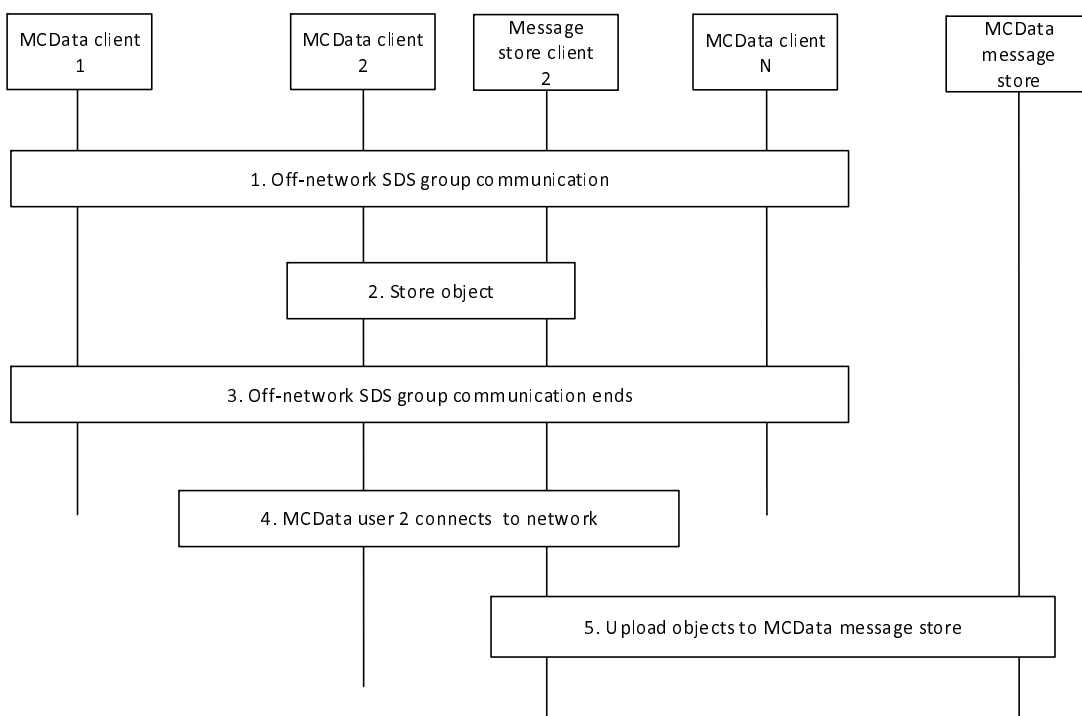


Figure 7.4.3.6.2-1: Group standalone short data service with MCDData message store

1. MCDData client 1 to MCDData client N are in an off-network group communication according to the procedures in subclause 7.4.3.4, SDS are exchanged among all MCDData clients.
2. If the SDS is for MCDData user consumption, the SDS is stored in the local message store on the MCDData UE of MCDData 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 MCDData message store to be used for synchronization.

3. The off-network group communication comes to an end.
4. The MCDData user 2 connects back to the network.
5. The MCDData user 2 decides to keep the off-network communication in his account on the MCDData message store. The message store client 2 uploads the off-network communication objects from the local message store to the MCDData 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 MCDData upload data request

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

Table 7.5.2.1.1-1: MCDData upload data request

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData user uploading data |
| Content (see NOTE) | O | Content to upload |
| Content reference (see NOTE) | O | URL reference of the content stored in the MCDData message store account of the MCDData user |
| Emergency indicator | O | Indicates that the data request is for MCDData emergency communication |
| NOTE: Either the Content or the Content reference shall be present but not both. | | |

7.5.2.1.2 MCDData upload data response

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

Table 7.5.2.1.2-1: MCDData upload data response

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData download data request

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

Table 7.5.2.1.3-1: MCDData download data request

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

7.5.2.1.4 MCDData download data response

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

Table 7.5.2.1.4-1: MCDData download data response

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

7.5.2.1.5 MCDData FD request (using HTTP)

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

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

| Information element | Status | Description |
|--------------------------------|---|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The functional alias associated with MCDData user sending the file |
| MCDData ID (see NOTE) | O | The identity of the MCDData user receiving the file |
| Functional alias (see NOTE) | O | The associated functional alias of the MCDData user identity towards which the data is sent. |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData emergency communication |
| Deposit file indication | O | Indicates whether the file to be stored into the MCDData message store account of the MCDData user |
| NOTE: | At least one identity shall be present. If both are present the MCDData ID shall be used to route the request and the functional alias is just for information. | |

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

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

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The associated functional alias of the MCDData user identity sending the file |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Functional alias | O | The associated functional alias of the MCDData user identity towards which the data is sent. |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData emergency communication |

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

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

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The associated functional alias of the MCDData user sending the file |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData emergency communication |
| Object Identifier | O | If the message is stored in the Message Store of the user account, the object identifier generated by the Message Store is communicated to the MCDData client to use to retrieve this particular message in the Message Store. |

7.5.2.1.6 MCDData FD response (using HTTP)

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

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

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

7.5.2.1.7 MCDData download completed report

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

Table 7.5.2.1.7-1: MCDData download completed report

| Information element | Status | Description |
|--------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending FD request |
| MCDData ID | M | The identity of the MCDData user sending response |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | M | Identifies the original MCDData 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 MCDData aggregated download completed report

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

Table 7.5.2.1.7A-1: MCDData aggregated download completed report

| Information element | Status | Description |
|--|-------------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData transaction |
| Reply Identifier | M | Identifies the original MCDData transaction which the current transaction is a reply to |
| Successful MCDData ID list | O (NOTE) | List, partial or full, of MCDData users who successfully received the file delivery |
| Unsuccessful MCDData ID list | O (NOTE) | List, partial or full, of MCDData 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 MCDData FD request (using media plane)

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

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

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The functional alias associated with MCDData user sending the file |
| MCDData ID (see NOTE 1) | O | The identity of the MCDData user receiving the file |
| Functional alias (see NOTE 1) | O | The associated functional alias of the MCDData user identity towards which the data is sent. |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData emergency communication |
| NOTE 1: At least one identity shall be present. If both are present the MCDData ID shall be used to route the request and the functional alias is just for information. | | |
| NOTE 2: Includes file metadata. | | |

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

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The associated functional alias of the MCDData user identity sending the file |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Functional alias | O | The associated functional alias of the MCDData user identity towards which the data is sent. |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData emergency communication |
| NOTE: Includes file metadata. | | |

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

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The associated functional alias of the MCDData user identity sending the file |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData emergency communication |
| NOTE: Includes file metadata. | | |

7.5.2.1.9 MCDData FD response (using media plane)

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

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

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user sending FD request |
| MCDData ID | M | The identity of the MCDData 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 MCDData group standalone FD request (using HTTP)

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

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

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The functional alias associated with MCDData user sending the file |
| MCDData group ID | M | The MCDData group ID to which the file is to be sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData imminent peril communication |
| Object Identifier | O | If the message is stored in the Message Store of the user account, the object identifier generated by the Message Store is communicated to the MCDData client to use to retrieve this particular message in the Message Store. |
| 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 MCDData group standalone FD request (in subclause 7.5.2.6.2) sent from the MCDData server to the MCDData client.

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

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The functional alias associated with MCDData user sending the file |
| MCDData group ID | M | The MCDData group ID to which the file is to be sent |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData 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 MCDData group standalone FD response (using HTTP or MBMS download delivery method)

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

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

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

7.5.2.1.12 MCDData group standalone FD request (using media plane)

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

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

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The functional alias associated with MCDData user sending the file |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData 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: MCDData group standalone FD request (using media plane/MCDData server to MCDData client)

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| Functional alias | O | The functional alias associated with MCDData user sending the file |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData 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 MCDData 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 MCDData group standalone FD response (using media plane)

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

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

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

7.5.2.1.14 MCDData remove file request

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

Table 7.5.2.1.14-1: MCDData remove file request

| Information element | Status | Description |
|---|--------|--|
| MCDData ID (see NOTE 1) | O | The identity of the MCDData user removing file |
| Partner MCDData content server address (see NOTE 2) | O | The identity of the partner MCDData content server where the file has been downloaded. This address is obtained when the partner MCDData content server downloads the shared file. |
| Content reference | M | URL of the content to be removed |
| NOTE 1: The identity of the MCDData user removing the file shall be present when sent from MCDData client to MCDData content server | | |
| NOTE 2: The address of the partner MCDData content server shall be present when sent from MCDData content server to partner MCDData content server. | | |

7.5.2.1.15 MCDData remove file response

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

Table 7.5.2.1.15-1: MCDData remove file response

| Information element | Status | Description |
|---|--------|--|
| MCDData ID (see NOTE 1) | O | The identity of the MCDData user removing file |
| Primary MCDData content server address (see NOTE 2) | O | The address of the primary MCDData content server where file removal request is sent |
| Result | M | Indicates the success or failure of the file removal |
| NOTE 1: The identity of the MCDData user removing the file shall be present when sent from MCDData content server to MCDData client | | |
| NOTE 2: The address of the primary MCDData content server shall be present when sent from partner MCDData content server to primary MCDData content server. | | |

7.5.2.1.16 Void

7.5.2.1.17 Void

7.5.2.1.18 Void

7.5.2.1.19 MCDData file retrieve request

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

Table 7.5.2.1.19-1: MCDData file retrieve request

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

7.5.2.1.20 MCDData file retrieve response

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

Table 7.5.2.1.20-1: MCDData file retrieve response

| Information element | Status | Description |
|--|--------|---|
| Content (see NOTE) | O | Requested content to download |
| Result | M | Indicates success or failure of MCDData download data request |
| NOTE: Content shall be present when the result of the MCDData file retrieve request indicates success. | | |

7.5.2.1.21 MCDData group standalone FD over MBMS request

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

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

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| MCDData group ID | M | The MCDData group ID to which the file is to be sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData one-to-one FD upgrade request

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

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

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

7.5.2.1.23 MCDData one-to-one FD upgrade response

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

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

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

7.5.2.1.24 MCDData group FD upgrade request

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

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

| Information element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending the upgrade request |
| Functional alias | O | The associated functional alias of the MCDData user sending data or receiving data. |
| MCDData group ID | M | The MCDData 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 MCDData 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 MCDData 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: MCDData group FD upgrade request (MCDData server to MCDData client)

| Information element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending the upgrade request |
| Functional alias | O | The associated functional alias of the MCDData user sending data or receiving data. |
| MCDData group ID | M | The MCDData group ID on which the emergency upgrade request is made |
| MCDData ID | M | The identity of the MCDData user receiving the upgrade request |
| Conversation Identifier | M | Identifies the conversation |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData 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 MCDData group FD upgrade response

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

Table 7.5.2.1.25-1: MCDData group FD upgrade response

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

7.5.2.1.26 MCDData group FD in-progress priority state cancel request

Table 7.5.2.1.26-1 describes the information for the MCDData group FD in-progress priority state cancel request sent from the MCDData client to the MCDData server and from the MCDData server to another MCDData client.

Table 7.5.2.1.26-1: MCDData group FD in-progress priority state cancel request (MCDData client to MCDData server)

| Information Element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the cancelling MCDData User |
| MCDData group ID | M | The MCDData group ID on which the MCDData in-progress emergency state is to be cancelled. |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData 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: MCDData group FD in-progress priority state cancel request (MCDData server to MCDData client)

| Information Element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the cancelling MCDData User |
| MCDData group ID | M | The MCDData group ID on which the MCDData in-progress emergency state is to be cancelled. |
| MCDData ID | M | The identity of the MCDData user receiving the cancel request |
| Emergency indicator (see NOTE 1) | O | Indicates that the data request is for MCDData 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 MCDData 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 MCDData group FD in-progress priority state cancel response

Table 7.5.2.1.27-1 describes the information flow for the MCDData group FD in-progress priority state cancel response sent from the MCDData server to the MCDData client.

Table 7.5.2.1.27-1: MCDData group FD in-progress priority state cancel response information elements

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

7.5.2.1.28 MCDData file upload request

Table 7.5.2.1.28-1 describes the information flow for the MCDData file upload request sent from the MCDData client to the MCDData server.

Table 7.5.2.1.28-1: MCDData file upload request

| Information element | Status | Description |
|------------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user uploading the file |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Access information | M | Provides access resource details to be used by the MCDData client for the file upload, e.g. IP address and port |
| MCDData content server information | M | Provides information about the target MCDData 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 MCDData emergency communication |

7.5.2.1.29 MCDData file upload response

Table 7.5.2.1.29-1 describes the information flow for the MCDData file upload response sent from the MCDData server to the MCDData client.

Table 7.5.2.1.29-1: MCDData file upload response

| Information element | Status | Description |
|--------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user requesting to upload the file |
| Transaction Identifier | M | Identifies the MCDData transaction |
| File upload confirmation | M | Indicates whether the file upload to the MCDData content server can proceed or not |

7.5.2.1.30 MCDData file upload completion status

Table 7.5.2.1.30-1 describes the information flow for the MCDData file upload completion status sent from the MCDData client to the MCDData server.

Table 7.5.2.1.30-1: MCDData file upload completion status

| Information element | Status | Description |
|------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user uploading the file |
| Transaction Identifier | M | Identifies the MCDData transaction |
| File upload status | M | Indicates the file upload to the MCDData content server is completed |

7.5.2.1.31 MCDData file download request

Table 7.5.2.1.31-1 describes the information flow for the MCDData file download request sent from the MCDData client to the MCDData server.

Table 7.5.2.1.31-1: MCDData file download request

| Information element | Status | Description |
|------------------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user downloading the file |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Access information | M | Provides access resource details to be used by the MCDData client for the file download, e.g. IP address and port |
| MCDData content server information | M | Provides information about the target MCDData 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 MCDData emergency communication |

7.5.2.1.32 MCDData file download response

Table 7.5.2.1.32-1 describes the information flow for the MCDData file download response sent from the MCDData server to the MCDData client.

Table 7.5.2.1.32-1: MCDData file download response

| Information element | Status | Description |
|----------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user requesting to download the file |
| Transaction Identifier | M | Identifies the MCDData transaction |
| File download confirmation | M | Indicates whether the file download from the MCDData content server can proceed or not |

7.5.2.1.33 MCDData file availability request

Table 7.5.2.1.33-1 describes the information flow for the MCDData file availability request sent from the MCDData server to the MCDData content server.

Table 7.5.2.1.33-1: MCDData file availability request

| Information element | Status | Description |
|---------------------|--------|--|
| Content reference | M | URL reference of the file required to check its availability in the MCDData content server |

7.5.2.1.34 MCDData file availability response

Table 7.5.2.1.34-1 describes the information flow for the MCDData file availability response sent from the MCDData content server to the MCDData server.

Table 7.5.2.1.34-1: MCDData file availability response

| Information element | Status | Description |
|---------------------|--------|--|
| Content reference | M | URL reference of the file required to check its availability in the MCDData 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 MCDData content server.

7.5.2.2.2 Procedure for uploading the file residing in the local storage of the MCDData UE without QoS

The procedure in figure 7.5.2.2.2-1 describes the case where an MCDData user is uploading a file to media storage function on the MCDData content server.

Pre-conditions:

1. The MCDData user on the media storage client is registered for receiving MCDData service.
2. The MCDData content server has the ability to verify if the requesting MCDData user is authorised to upload.

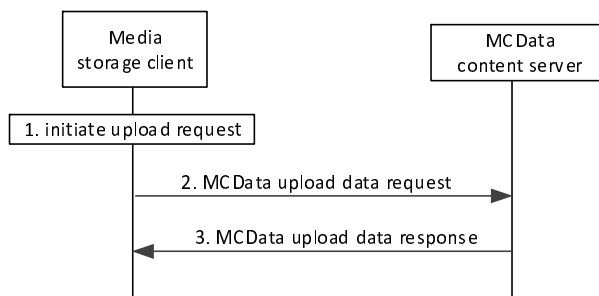


Figure 7.5.2.2.2-1: Uploading of the file residing in MCDData UE using HTTP

1. The user at the media storage client initiates a file upload request of the chosen file. If MCDData emergency state is already set for the media storage client (due to previously triggered MCDData 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 MCDData 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 MCDData content server for storing using the MCDData upload data request.
3. The MCDData content server stores the file and provides a MCDData 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 MCDData message store

The procedure in figure 7.5.2.2.3-1 describes the case where an MCDData user is uploading a file to media storage function on the MCDData content server from his or her MCDData message store account.

Pre-conditions:

1. The Media storage client knows the URL of the file residing in the MCDData message store account of the user.

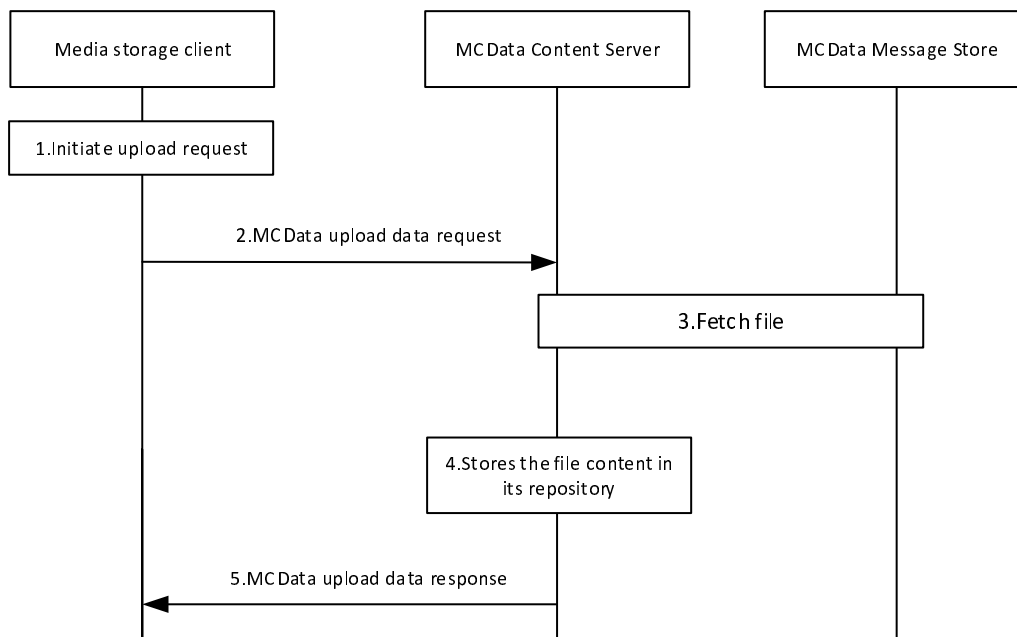


Figure 7.5.2.2.3-1: Uploading of the file residing in MCData message store using HTTP

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.

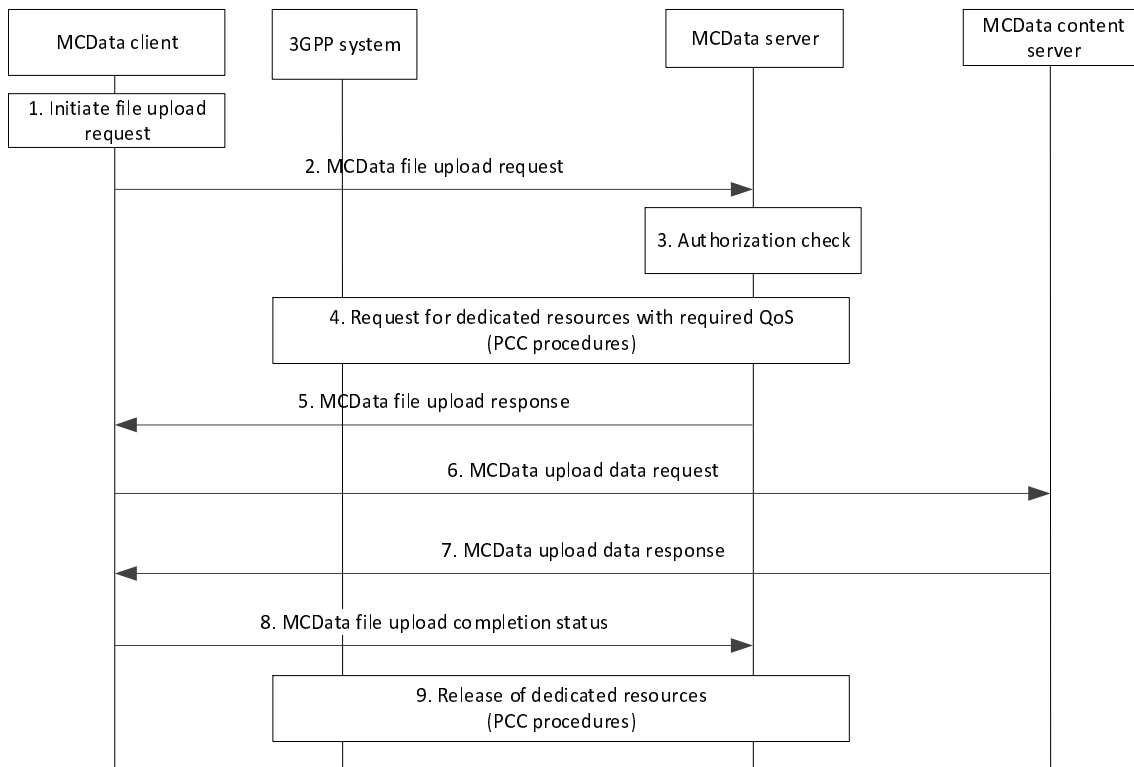


Figure 7.5.2.2.4-1: File upload using HTTP over network resources with required QoS

1. The MC user on the MCDData client intends to upload a file to the MCDData content server for file distribution. The MCDData client verifies that the size of the file is within the maximum data size for FD for the intended MCDData 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 MCDData emergency state is already set for the MCDData client, the MCDData client sets the emergency indicator in the request.
2. The MCDData client sends the MCDData file upload request to the MCDData server. This request contains information about the MCDData client (including IP address and port to be used for the file upload), and the target MCDData content server (including associated URI or IP address, and port).
3. The MCDData server verifies that the corresponding MCDData client is authorized to upload files to the corresponding MCDData content server.
4. If the MCDData client is authorized for the file upload, the MCDData 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 MCDData client and the MCDData content server. For that, the MCDData 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 MCDData server sends a MCDData file upload response to the MCDData client indicating if it can proceed with the file upload to the MCDData content server.
6. The media storage client on the MCDData client sends an MCDData upload data request to the media storage function on the MCDData content server to upload the file.
7. The MCDData content server provides an MCDData upload data response to the MCDData client indicating if the file was successfully stored (along with file URL) or failure.
8. The MCDData client provides to the MCDData server an MCDData file upload completion status indicating that the file upload is completed.
9. Based on the MCDData file upload completion status, the MCDData 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 MCDData content server.

7.5.2.3.2 Procedure for file download from the MCDData content server without QoS

The procedure in figure 7.5.2.3.2-1 describes the case where an MCDData user is downloading a file from the media storage function of the MCDData content server.

Pre-conditions:

1. The MCDData user on the media storage client is registered for receiving MCDData service.

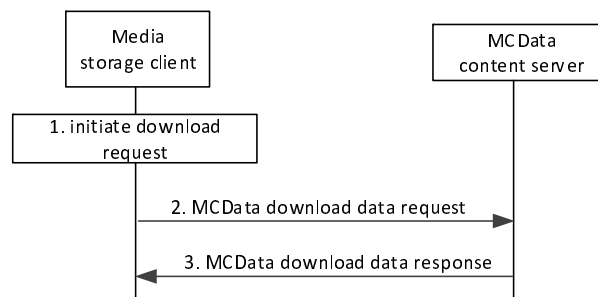


Figure 7.5.2.3.2-1: File download using HTTP

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 MCDData FD request or MCDData 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 MCDData download data request. If emergency indicator is set in received in MCDData FD request or MCDData group standalone FD request, the media storage client sets emergency indicator in MCDData 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 MCDData 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 MCDData client sends a request to the MCDData server for the download of a file from the media storage client on the MCDData client to the media storage function on the MCDData content server. The MCDData server can, therefore, request network resources with the required QoS for the corresponding file download.

Pre-conditions:

1. The MCDData user on the MCDData client is registered on the MCDData server for receiving MCDData service.
2. The MCDData client has been requested to download a file using HTTP and has received the corresponding file URL (via an MCDData FD request or MCDData group standalone FD request).
3. The MCDData client is required to download a file from the MCDData content server over network resources with required QoS.

NOTE 1: It is implementation specific whether an MCDData system enables that network resources with required QoS are required for file downloads.

- The MCDData 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 MCDData content server.

NOTE 2: How the MCDData 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.

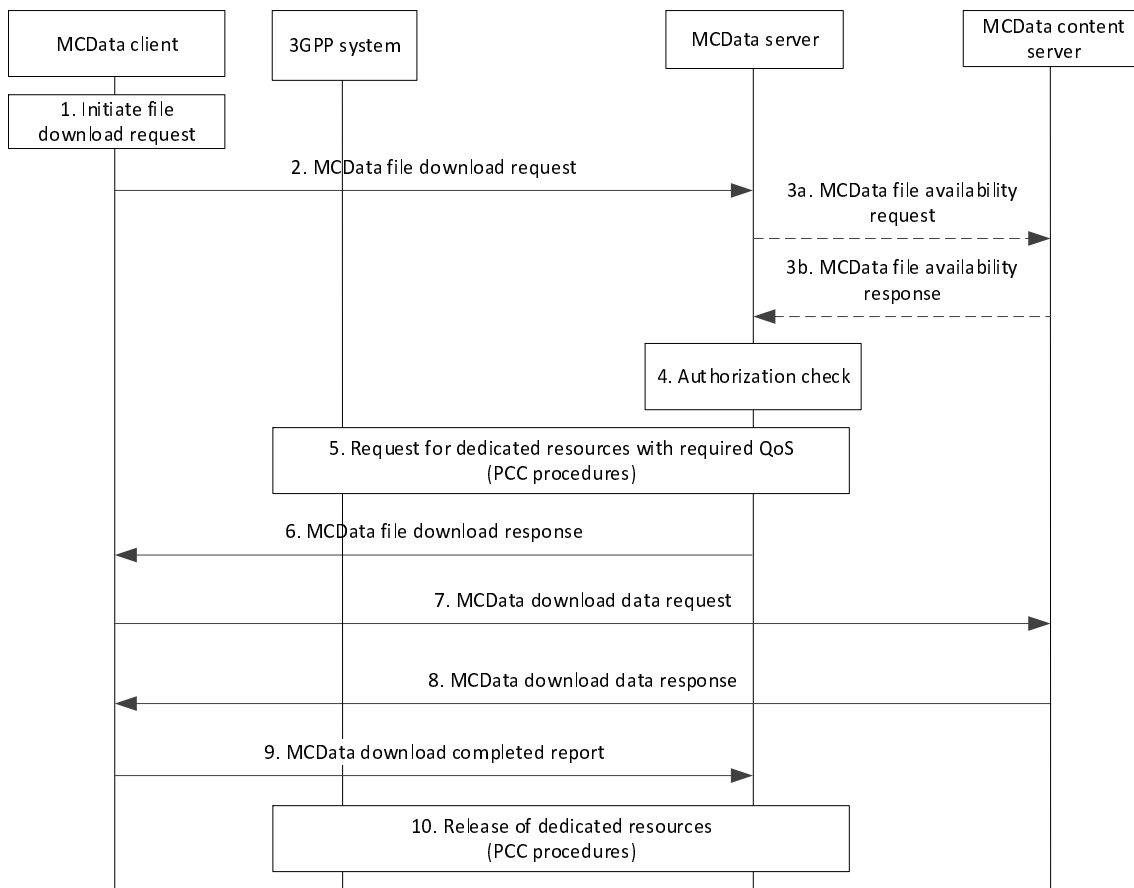


Figure 7.5.2.3.3-1: File download using HTTP over network resources with required QoS

- The MC user on the MCDData client intends to download a file from the MCDData content server based on a received MCDData FD request or MCDData group standalone FD request. If the MCDData emergency state is already set for the MCDData client, the MCDData client sets the emergency indicator in the request.
- The MCDData client sends the MCDData file download request to the MCDData server. This request contains information about the MCDData client (including IP address and port to be used for the file download), and the target MCDData content server (including associated URI or IP address, and port). The request also contains the corresponding file URL on the MCDData content server.
- The MCDData server may verify, based on the received file URL, whether the file is available in the MCDData content server via the MCDData-FD-5 reference point. For that, the MCDData server sends an MCDData file availability request to the MCDData content server. Upon the receipt of the request, the MCDData content server provides an MCDData file availability response to the MCDData server. If the MCDData server identifies that the corresponding file is not available in the MCDData content server, the MCDData server provides a response to the MCDData client indicating that the file download request cannot proceed due to the unavailability of the file in the MCDData content server.
- The MCDData server verifies that the corresponding MCDData client is authorized to download the file from the corresponding MCDData content server.
- If the MCDData client is authorized for the file download, the MCDData 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 MCDData client and the MCDData content server. For that, the MCDData 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 MCDData server sends a MCDData file download response to the MCDData client indicating whether it can proceed with the file download from the MCDData content server.
7. The media storage client on the MCDData client sends an MCDData download data request to the media storage function on the MCDData content server to download the corresponding file.
8. The MCDData content server provides an MCDData download data response to the MCDData client including the file for the case of a successful response.
9. The MCDData client provides to the MCDData server an MCDData download completed report indicating that the file download is completed.
10. Based on the MCDData download completed report, the MCDData 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 MCDData client uses HTTP file distribution to download a file that is uploaded by another MCDData client. The procedure is appropriate for both mandatory and non-mandatory download cases. The target MCDData user may be addressed using the functional alias that can be shared with other MCDData users.

7.5.2.4.2 Procedure for single MCDData system

The procedure in figure 7.5.2.4.2-1 describes the case where a MCDData user is initiating one-to-one data communication for sending file to the other MCDData user, with or without download completed report request.

Pre-conditions:

1. The MCDData users on the MCDData client 1 and the MCDData client 2 are already registered for receiving MCDData service.
2. The file to be distributed is uploaded to media storage function on MCDData content server using the procedures defined in subclause 7.5.2.2.
3. The MCDData client may have activated functional alias to be used.
4. The MCDData server has subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

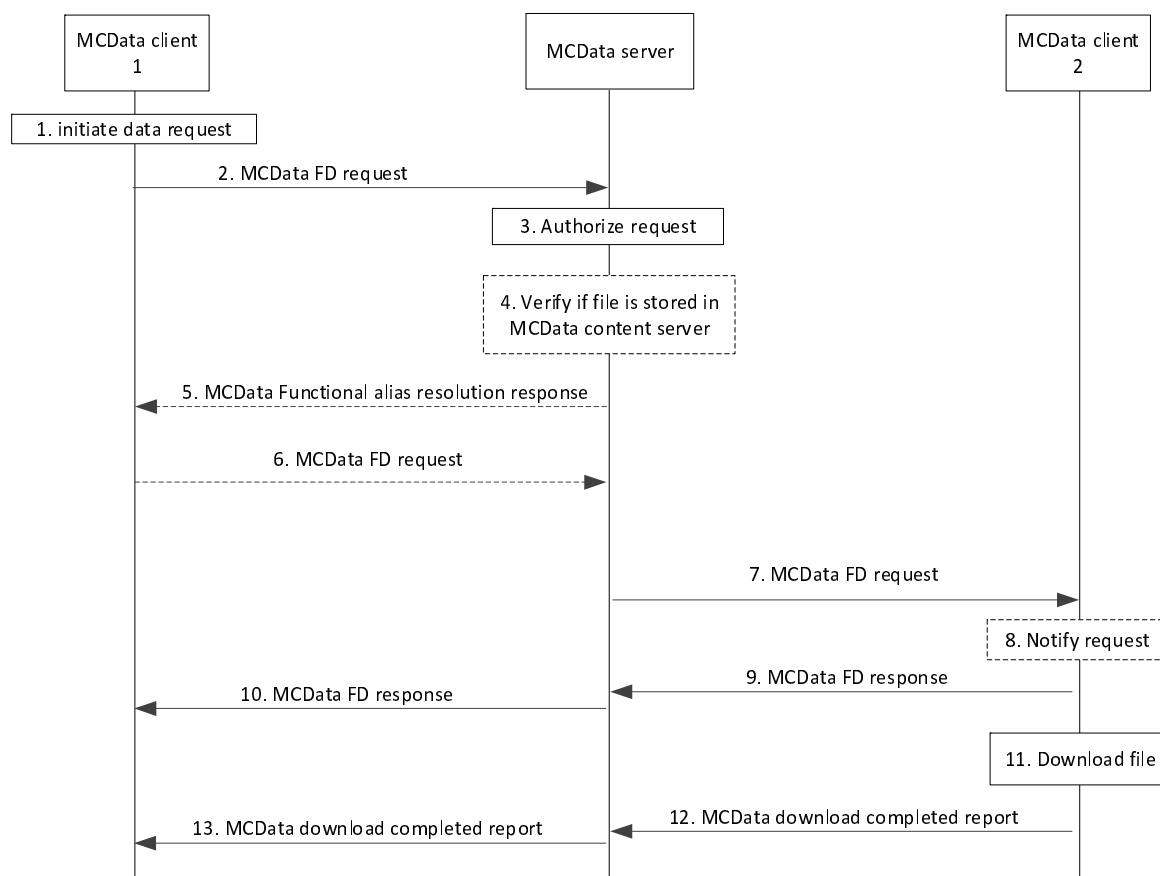


Figure 7.5.2.4.2-1: One-to-one file distribution using HTTP

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 MCDData IDs for which the functional alias is active and proceed with step 4 otherwise proceed with step 6.

NOTE 2: If the MCDData server detects that the functional alias used as the target of the MCDData FD request is simultaneously active for multiple MCDData users, then the MCDData server can proceed by selecting an appropriate MCDData ID based on some selection criteria. The selection of an appropriate MCDData ID is left to implementation. These selection criteria can include rejection of the MCDData FD request, if no suitable MCDData ID is selected.

4. The MCDData server may verify whether the corresponding file is available in the MCDData content server (not shown in the figure) via the MCDData-FD-5 reference point using the received file URL in the MCDData FD request. For that, the MCDData server sends an MCDData file availability request to the MCDData content server. Upon the receipt of the request, the MCDData content server provides an MCDData file availability response to the MCDData server. If the MCDData server identifies that the corresponding file is not available in the MCDData content server, the MCDData server provides a response to the MCDData client 1 indicating that the file distribution request cannot proceed due to the unavailability of the file in the MCDData content server.
5. The MCDData server responds back to MCDData client 1 with a functional alias resolution response message that contains the resolved MCDData ID.
6. If the MCDData server replies with a MCDData functional alias resolution response message, the MCDData client 1 assumes the MCDData FD request in step 2 is rejected and sends a new MCDData FD request towards the resolved MCDData ID.
7. MCDData server initiates the MCDData FD request towards MCDData client 2. The MCDData FD request towards the MCDData user contains an emergency indicator if it is present in the received MCDData FD request from MCDData client 1. If the deposit file indication information element is set to true in the received MCDData FD request, MCDData 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 MCDData communication to the MCDData message store account of the user at MCDData client 1.

NOTE 3: MCDData client 2 does not set its emergency state as a result of receiving the MCDData FD request containing the emergency indicator.

8. The receiving MCDData client 2 notifies the user about the incoming MCDData FD request (including file metadata, if present) which may be either accepted or rejected or ignored.
9. The MCDData user 2 may provide a response (accept or reject) or not (ignore) to the notification, then MCDData client 2 sends the MCDData FD response to the MCDData server. The MCDData client 2 automatically sends an accepted MCDData FD response when the received request includes a mandatory download indication.
10. The MCDData server forwards the MCDData FD response to the MCDData client 1.
11. The Media storage client on the MCDData client 2 downloads the file from the MCDData content server using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCDData user 2 subsequent action. The MCDData client 2 records file download completed and notifies the MCDData user 2.
12. The MCDData client 2 provides an MCDData download completed report for reporting file download completed, if requested by the user at MCDData client 1.
13. The received MCDData file download completed report from the MCDData client 2 may be stored by the MCDData server for download history interrogation from authorized MCDData users. The MCDData download completed report is sent by the MCDData server to the MCDData user at MCDData client 1, if requested by the MCDData client 1.

7.5.2.4.3 Procedure with interconnection between MCDData systems

The procedure in figure 7.5.2.4.3-1 describes the case where a MCDData user initiates a one-to-one data communication for sending a file to another MCDData user where that other MCDData user is receiving MCDData service on a partner MCDData system, and where interconnection is in use between the two MCDData systems. In this procedure, the file has not previously been downloaded in the partner MC system.

Pre-conditions:

1. The MCDData users on the MCDData client 1 and the MCDData client 2 are already service authorized and receiving MCDData service. MCDData client 1 is receiving service on its primary MCDData system, and MCDData client 2 is receiving MCDData service in the partner MCDData system of MCDData client 1.
2. The file to be distributed has been uploaded to the media storage function on the MCDData content server in the primary MCDData system of MCDData client 1 using the procedures defined in subclause 7.5.2.2.
3. There is a service agreement between the primary and partner MCDData systems to allow files to be shared between MCDData content servers in the two systems.
4. The MCDData client may have an activated functional alias to be used.
5. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

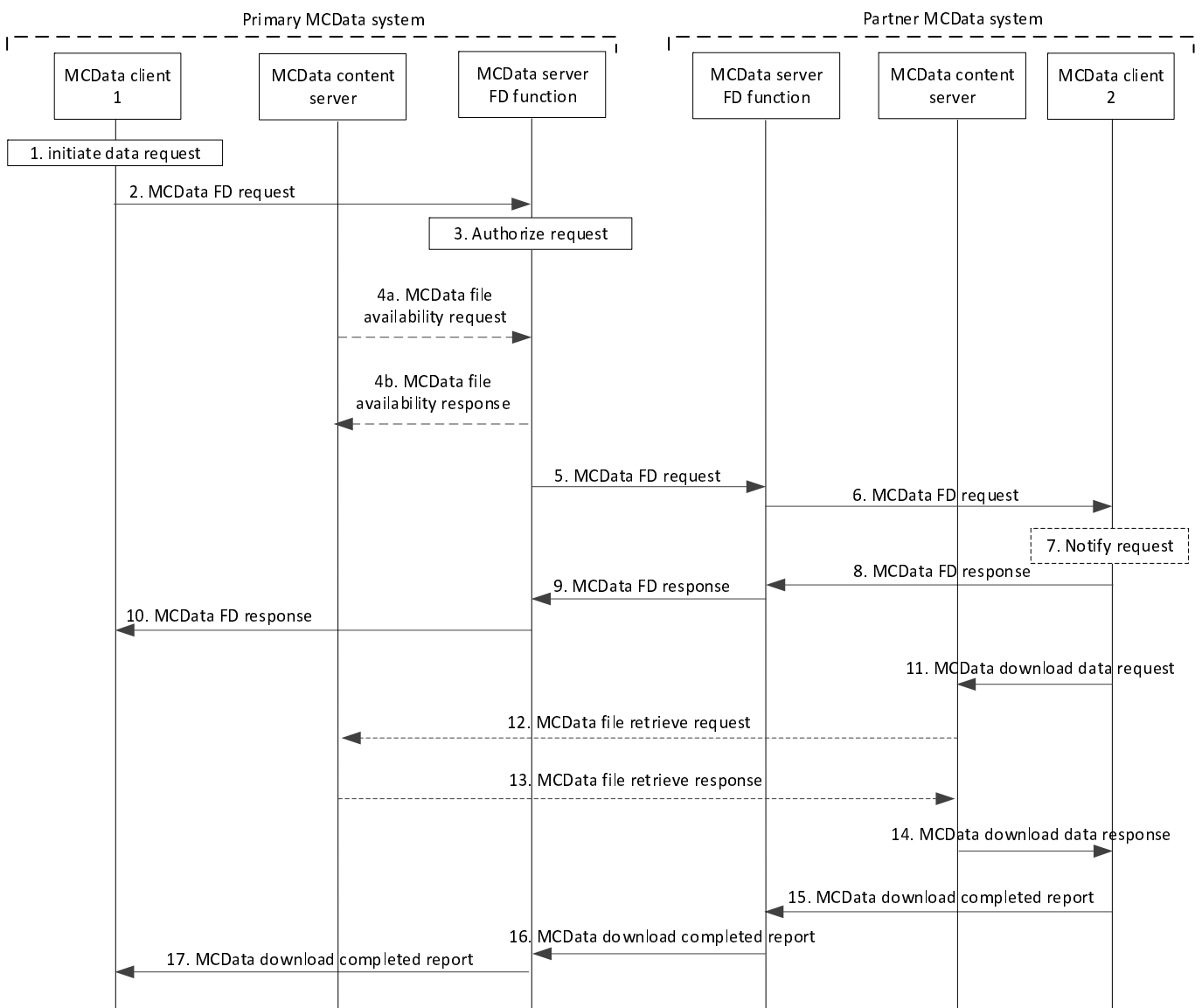


Figure 7.5.2.4.3-1: One-to-one file distribution using HTTP with interconnection

1. The user at the MCDData client 1 initiates a file distribution request to the MCDData user at MCDData client 2.
2. MCDData client 1 sends an MCDData FD request towards the primary MCDData server. The MCDData 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 MCDData FD request indicates the target MCDData user for the one-to-one data communication. The MCDData FD request contains a conversation identifier for message thread indication. If the MCDData user at MCDData client 1 has requested to mandatory download at the recipient side,

then the MCDData FD request contains the mandatory download indication. The MCDData FD request may contain a request for a download completed report indication if selected by the user at MCDData client 1. The MCDData user at MCDData client 1 may include a functional alias within the FD data transfer and may address the target MCDData client 2 using a functional alias.

3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send the MCDData FD request and that the size of the file is below maximum data size for FD from the service configuration. MCDData server verifies whether the provided functional alias of MCDData client 1, if present, can be used and has been activated for the user.
4. The MCDData server may verify whether the corresponding file is available in the MCDData content server via the MCDData-FD-5 reference point using the received file URL in the MCDData FD request. For that, the MCDData server sends an MCDData file availability request to the MCDData content server. Upon the receipt of the request, the MCDData content server provides an MCDData file availability response to the MCDData server. If the MCDData server identifies that the corresponding file is not available in the MCDData content server, the MCDData server provides a response to the MCDData client 1 indicating that the file distribution request cannot proceed due to the unavailability of the file in the MCDData content server.
5. The MCDData server in the primary MCDData system initiates the MCDData FD request towards the MCDData server in the partner MCDData system, which contains the URL of the file which is stored in the primary MCDData content server. The request includes the necessary access authorization information as MCDData client 2 will retrieve the file while receiving service in the partner MCDData 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 MCDData clients, the partner MCDData system is to be determined by the primary MCDData system.

6. If functional alias is used to address that target MCDData user, the MCDData server in the partner MCDData system resolves the MCDData IDs of the functional alias. The resulting list contains all associated MCDData IDs/MCDData users that may share this functional alias. The MCDData server in the partner MCDData system now checks which MCDData users have FD capabilities and which are authorized to receive a file. The partner MCDData server sends the MCDData FD request to the MCDData users determined. The file URL being provided in MCDData FD request to the MCDData users determined is prepended with server URI of the partner MCDData content server, such that the URL identifies a file location in the partner MCDData content server.

NOTE 3: Determination of the target MCDData client is based on the associated MCDData IDs that share a functional alias and other criteria.

7. The receiving MCDData client 2 may notify the user about the incoming MCDData FD request (including file metadata, if present) which may be either accepted, rejected or ignored.
8. The MCDData user 2 may provide a response (accept or reject) or not (ignore) to the notification, then the MCDData client 2 sends the MCDData FD response to the partner MCDData server. The MCDData client 2 automatically sends an accepted MCDData FD response when the received request includes a mandatory download indication.
9. The partner MCDData server forwards the MCDData FD response to the MCDData server in the primary MCDData system.
10. The primary MCDData server forwards the MCDData FD response to MCDData client 1.
11. MCDData client 2 requests the file from the partner MCDData content server.

NOTE 4: Step 11 may occur any time after step 8, before or after steps 9 and 10.

12. The partner MCDData content server checks whether the file is stored locally, and if this is not the case, sends an MCDData file retrieve request to the primary MCDData content server. The MCDData file retrieve request contains the URL of the file location in the primary MCDData 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 MCDData content server responds to the partner MCDData content server with an MCDData file retrieve response which contains the content of the file to be retrieved. File metadata may include the lifetime of the file. The primary MCDData content server records that the file has been sent to the indicated partner MCDData system.

NOTE 6: The partner MCDData content server may store the local copy of the file in case future requests arise until the expiry time sent from primary MCDData system for the file is reached or until a request is received to delete the file.

14. The partner MCDData content server sends the file to MCDData client 2 in the MCDData download data response. MCDData client 2 records file download completed and notifies MCDData user 2.

15. The MCDData client 2 provides an MCDData download completed report for reporting file download completed, if this was requested by the user at MCDData client 1 in the initial MCDData FD request.

16. The MCDData download completed report is sent to the primary MCDData server. The partner MCDData server may store the download completed report for download history interrogation from authorized MCDData users in the partner MCDData system.

17. The received MCDData download completed report is sent by the primary MCDData server to the MCDData user at MCDData client 1, if requested by the MCDData client 1. The MCDData file download completed report from the MCDData client 2 may be stored by the primary MCDData server for download history interrogation from authorized MCDData users in the primary MCDData system.

7.5.2.5 One-to-one file distribution using media plane

7.5.2.5.1 General

The MCDData client uses the media plane for a standalone data file download from another MCDData client. The procedure is appropriate for both mandatory and non-mandatory download cases. The target MCDData user may be addressed using the functional alias that can be shared with other MCDData users.

7.5.2.5.2 Procedure

The procedure in figure 7.5.2.5.2-1 describes the case where an MCDData user is initiating one-to-one data communication for sending file to the other MCDData user, with or without download completed report request.

Pre-conditions:

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

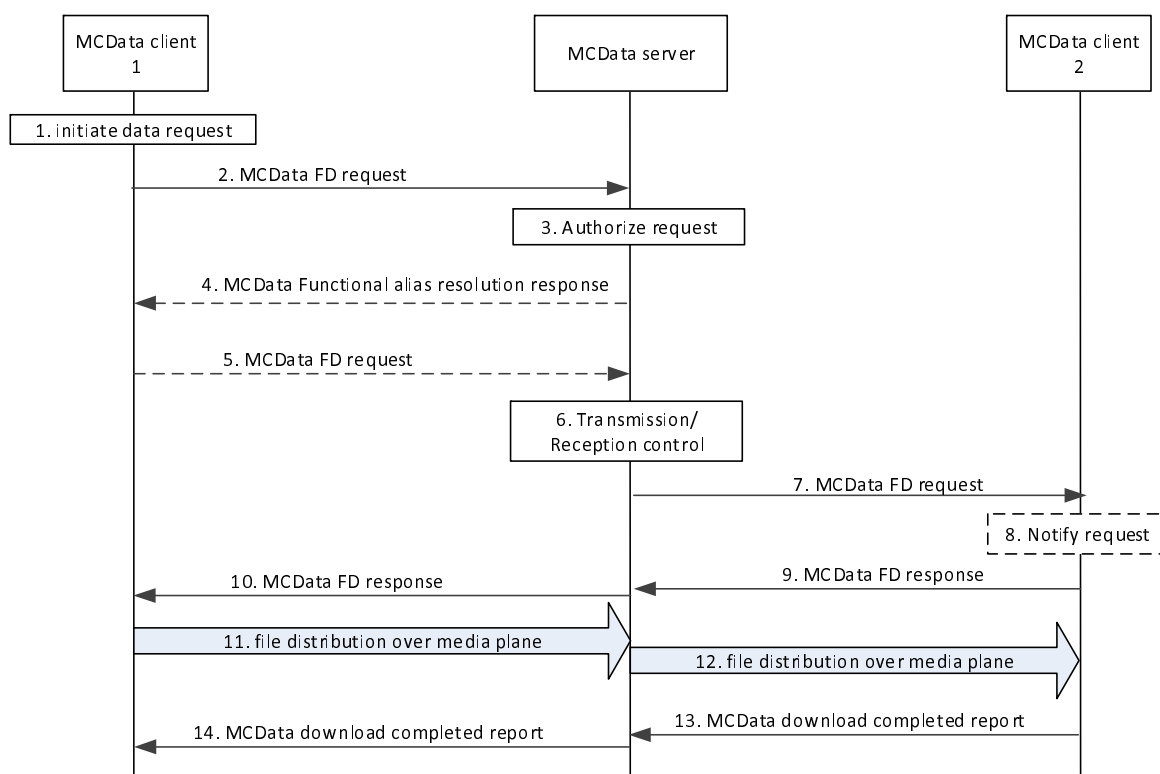


Figure 7.5.2.5.2-1: One-to-one file distribution using media plane

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 MCDData server responds back to MCDData client 1 with a functional alias resolution response message that contains the resolved MCDData ID.
5. If the MCDData server replies with a MCDData functional alias resolution response message, the MCDData client 1 assumes the MCDData FD request in step 2 is rejected and sends a new MCDData FD request towards the resolved MCDData ID.
6. The MCDData server also applies transmission and reception control and the necessary policy to ensure that appropriate data is transmitted between the MCDData UEs.
7. MCDData server initiates the MCDData FD request towards the MCDData users determined. The MCDData FD request towards the MCDData user contains the emergency indicator if it is present in the received MCDData FD request from MCDData client 1.

NOTE 3: MCDData client 2 does not set its emergency state as a result of receiving the MCDData FD request containing the emergency indicator.

8. The receiving MCDData client 2 notifies the user about the incoming MCDData FD request which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCDData FD request an accepted response is assumed.
9. If the target MCDData user 2 provides a response (accept or reject) to the notification, then MCDData client 2 sends the MCDData FD response to the MCDData server. MCDData client 2 automatically sends accepted MCDData FD response when the incoming request included mandatory download indication.
10. MCDData server forwards the MCDData FD response from MCDData client 2 back to MCDData client 1.
11. MCDData client 1 distributes the file over the established media plane to MCDData server.
12. MCDData server distributes the file received from MCDData client 1 to MCDData client 2 over the established media plane. File download report is shared by the MCDData client 2, if requested by the user at MCDData client 1. After file transaction is completed, the media plane is released. The MCDData client 2 records file download completed and notifies MCDData user 2.

NOTE 4: MCDData server is not required to wait for the complete download of file from MCDData client 1 prior to initiating file distribution to MCDData client 2.

13. MCDData client 2 initiates a MCDData download completed report for reporting file download completed, if requested by the user at MCDData client 1.
14. The MCDData file download completed report from MCDData client may be stored by the MCDData server for download history interrogation from the authorized MCDData users. MCDData download completed report is sent by the MCDData server to the user at MCDData 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 MCDData user is initiating group standalone data communication for sending a file to multiple MCDData users, with or without download completed report request from the MCDData user.

Pre-conditions:

1. The MCDData users on the MCDData clients 1 to n belong to the same MCDData group and are already registered for receiving MCDData service and affiliated to the group.
2. The file to be distributed is uploaded to the media storage function on the MCDData content server using the procedures defined in subclause 7.5.2.2.

3. The MCDData client may have an activated functional alias to be used.
4. The MCDData server has subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

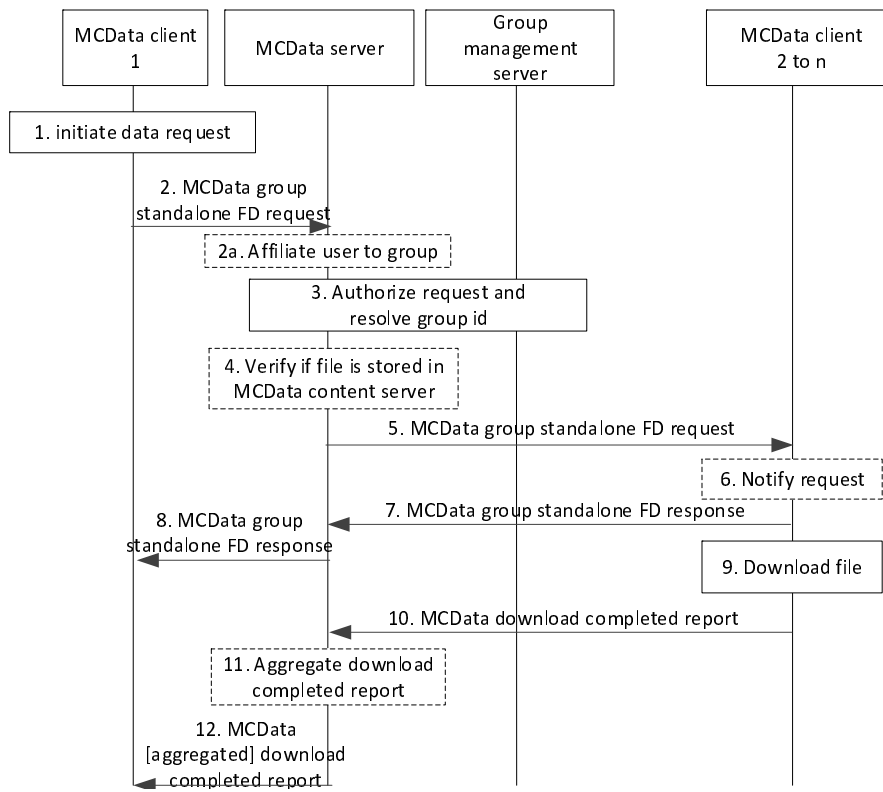


Figure 7.5.2.6.2-1: Group standalone FD using HTTP

1. The user at the MCDData client 1 initiates a file distribution request to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. The MCDData client 1 sends a MCDData group standalone FD request towards the MCDData server. The MCDData FD request contains content payload in the form of file URL and may contain the file metadata information. The MCDData group standalone data request contains either the selected MCDData group ID or the target recipients as selected by the user at MCDData client 1. The MCDData group standalone FD request contains conversation identifier for message thread indication. The MCDData group standalone FD request may include additional implementation specific information in the application metadata container. If MCDData user at MCDData client 1 has requested to mandatory download at the recipient side, then MCDData group standalone FD request contains mandatory download indication. The MCDData group standalone FD request may contain a download completed report indication if selected by the user at MCDData client 1. The MCDData user at MCDData client 1 may include a functional alias within the FD data transfer. If the MCDData user at MCDData client has requested to deposit the file content into his/her MCDData message store account, then MCDData FD request contains deposit file indication set.

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

- i) the MCDData group standalone FD request shall contain an emergency indicator;
- ii) the MCDData group standalone FD request shall set an alert indicator if configured to send an MCDData emergency alert while initiating an MCDData group standalone FD request for the emergency FD communication; and
- iii) if the MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCDData emergency state of MCDData client 1 is retained until explicitly cancelled by the user of MCDData client 1.

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

If the MCDData user at MCDData client 1 initiates an MCDData imminent peril FD communication:

- i) the MCDData group standalone FD request shall contain an imminent peril indicator.
- 2a. If either emergency indicator or imminent peril indicator is present in the received MCDData group standalone FD request, the MCDData server implicitly affiliates MCDData client 1 to the MCDData group if the client is not already affiliated.
 3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send an MCDData group standalone FD request and that the size of the file is below maximum data size for FD from the group configuration. MCDData server verifies whether the provided functional alias, if present, can be used and has been activated for the user. If the MCDData group ID is used, the MCDData server resolves the MCDData 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 MCDData group standalone FD request and if the MCDData group is not in the in-progress emergency state, the MCDData group is considered to be in the in-progress emergency state until cancelled; and

NOTE 2: While the MCDData group is in the in-progress emergency state, all types of MCDData communications within the group are processed as emergency group communications by the MCDData server. MCDData 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 MCDData group standalone FD request and if the MCDData group is not in the in-progress imminent peril state, the MCDData group is considered to be in the in-progress imminent peril state until cancelled.
4. The MCDData server may verify whether the corresponding file is available in the MCDData content server (not shown in the figure) via the MCDData-FD-5 reference point using the received file URL in the MCDData group standalone FD request. For that, the MCDData server sends an MCDData file availability request to the MCDData content server. Upon the receipt of the request, the MCDData content server provides an MCDData file availability response to the MCDData server. If the MCDData server identifies that the file is not available in the MCDData content server, the MCDData server provides a response to the MCDData client 1 indicating that the file distribution request cannot proceed due to the unavailability of the file in the MCDData content server and skip rest of the steps. If the deposit file indication information element is set to true in the received MCDData FD request, MCDData 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 MCDData communication to the MCDData message store account of the user at MCDData client 1.
 5. MCDData server initiates the MCDData group standalone FD request towards each MCDData user determined in step 3. The MCDData group standalone FD request towards each MCDData client contains:
 - i) an emergency indicator if it is present in the received MCDData group standalone FD request from the MCDData client 1;
 - ii) an imminent peril indicator if it is present in the received MCDData group standalone FD request from the MCDData client 1; and
 - iii) an alert indicator if requested to initiate an emergency alert in the received MCDData group standalone FD request from the MCDData client 1.
 6. The receiving MCDData clients 2 to n notify the user about the incoming MCDData group standalone FD request (including file metadata, if present) which may be either accepted or rejected or ignored.
 7. If the target MCDData user on MCDData clients 2 to n provides a response (accept or reject) to the notification, then respective MCDData client sends the MCDData group standalone FD response to the MCDData server. MCDData client 2 to n automatically sends accepted MCDData group standalone FD response when the incoming request included mandatory download indication.
 8. The MCDData server forwards the MCDData group standalone FD responses to the MCDData 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 MCDData client(s) accepting the request downloads the file from the MCDData 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 MCDData user subsequent action. The MCDData clients successfully receiving the file through the media storage clients, record file download completed and notify the MCDData users.
10. The MCDData clients, receiving the file through the media storage client, provide MCDData download completed reports for reporting file download completed, if requested by the user at MCDData client 1.
11. The MCDData file download completed reports from MCDData clients may be stored by the MCDData server for download history interrogation from the authorized MCDData users. The MCDData file download completed report from each MCDData user may be aggregated.
12. Aggregated or individual MCDData download completed reports are sent by the MCDData server to the MCDData user at MCDData client 1, if requested by the MCDData 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 MCDData user is initiating group standalone data communication for sending file to multiple MCDData users, with or without download completed report request.

Pre-conditions:

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

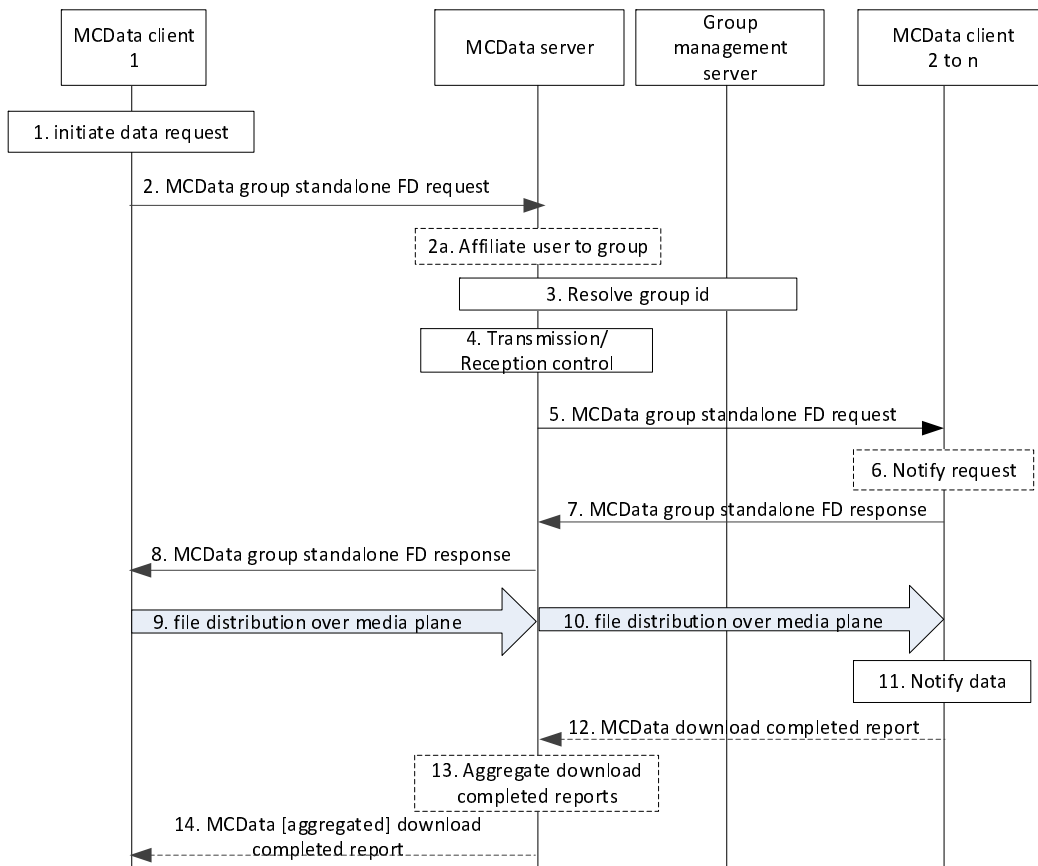


Figure 7.5.2.7.2-1: Group standalone FD using media plane

1. The user at the MCDData client 1 initiates a file distribution request to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group standalone FD request towards the MCDData server. File metadata information is included in the SDP. The MCDData group standalone data request contains target recipient(s) as selected by the user at MCDData client 1. The MCDData group standalone FD request contains conversation identifier for message thread indication. The MCDData group standalone FD request may include additional implementation specific information in the application metadata container. MCDData group standalone FD request may contain mandatory download indication. The MCDData group standalone FD request may contain download completed report indication if selected by the user at MCDData client 1. MCDData user at MCDData client 1 may include a functional alias within the FD data transfer.

If the MCDData user at MCDData client 1 initiates an MCDData emergency file distribution communication or the MCDData emergency state is already set for the MCDData client 1 (due to a previously triggered MCDData emergency alert):

- i) the MCDData group standalone FD request shall contain an emergency indicator;
- ii) the MCDData group standalone FD request shall set an alert indicator if configured to send an MCDData emergency alert while initiating an MCDData group standalone FD request for the emergency file distribution service communication; and
- iii) if the MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCDData emergency state is retained until explicitly cancelled.

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

If the MCDData user at MCDData client 1 initiates an MCDData imminent peril file distribution communication:

- i) the MCDData 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. MCDData client 2 initiates a MCDData download completed report for reporting file download completed, if requested by the user at MCDData client 1.
13. The MCDData file download completed report(s) from MCDData client(s) may be stored by the MCDData server for download history interrogation from the authorized MCDData users. The MCDData file download completed report from each MCDData user may be aggregated.
14. Aggregated or individual MCDData file download completed report is sent to the disposition requesting user at MCDData 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 MCDData content server.

7.5.2.8.2 Procedure for single MCDData system

The procedure in figure 7.5.2.8.2-1 describes the case where a MCDData user is removing the file that was previously uploaded to the MCDData content server.

Pre-conditions:

1. The MCDData user on the media storage client is registered for receiving MCDData service.
2. The file has been successfully uploaded by the MCDData user using the procedures defined in subclause 7.5.2.2.
3. The MCDData content server has the ability to verify if the requesting MCDData user is authorised to remove.

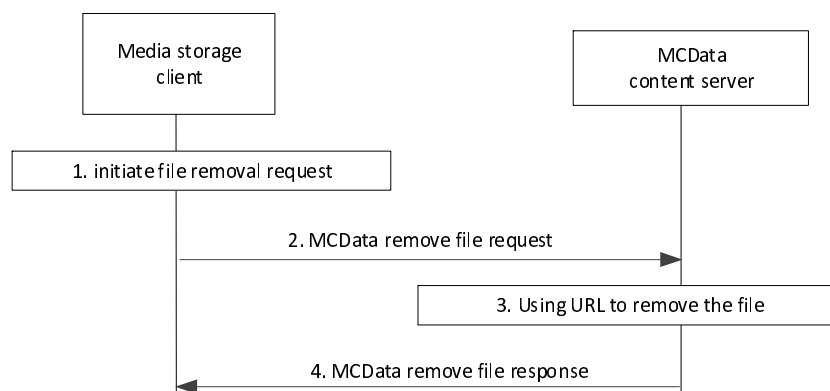


Figure 7.5.2.8.2-1: File removal using HTTP by authorised user

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 MCDData content server.
3. The MCDData content server remove the file indicated by the URL.
4. The MCDData content server informs the media storage client if the file is successfully removed.

NOTE: It is implementation specific if a notification will be sent to the file URL recipient that has not downloaded the file.

7.5.2.8.3 Procedure for interconnection between MCDData systems

The procedure in figure 7.5.2.8.3-1 describes the case where an MCDData user removes the file that was previously uploaded to the primary MCDData system MCDData content server, and where the file has been made available in the partner MCDData system MCDData content server.

Pre-conditions:

1. The MCDData user on the media storage client is registered for receiving MCDData service.
2. The file has previously been uploaded to the MCDData content server in the primary MCDData system of MCDData client 1.
3. The file has been successfully transferred to the MCDData content server in the partner MCDData system.

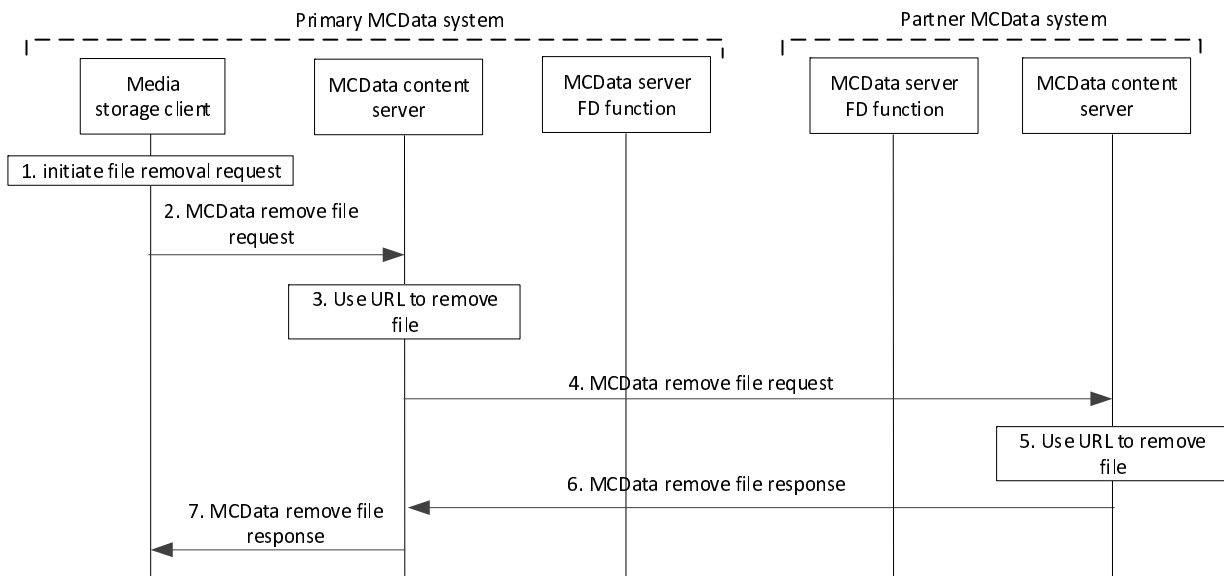


Figure 7.5.2.8.3-1: File removal using HTTP by authorized user

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 MCDData content server.
 3. The primary MCDData 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 MCDData content server has recorded that the file has previously been sent to the partner MCDData system, the primary MCDData content server sends the MCDData remove file request to the partner MCDData content server, containing the URL of the file which was stored on the primary MCDData content server.
 5. The partner MCDData content server removes the file indicated by the URL.

NOTE 1: The partner MCDData content server shall maintain an association of the URL from the primary MCDData content server and the local URL where the file is stored locally.

6. The partner MCDData content server informs the primary MCDData content server that the file has been successfully removed.

7. The primary MCDData content server informs the media storage client if the file is successfully removed.

NOTE 2: It is implementation specific if a notification will be sent to the file URL recipient that has not downloaded the file.

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 MCDData 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 MCDData user is initiating group standalone data communication for sending a file to multiple MCDData users, with or without download completed report request.

Pre-conditions:

1. The MCDData users on the MCDData client 1 to n belong to the same group and are already registered for receiving MCDData service and affiliated.
2. The file to be distributed is uploaded to the media storage function on the MCDData content server using the procedure defined in subclause 7.5.2.2.

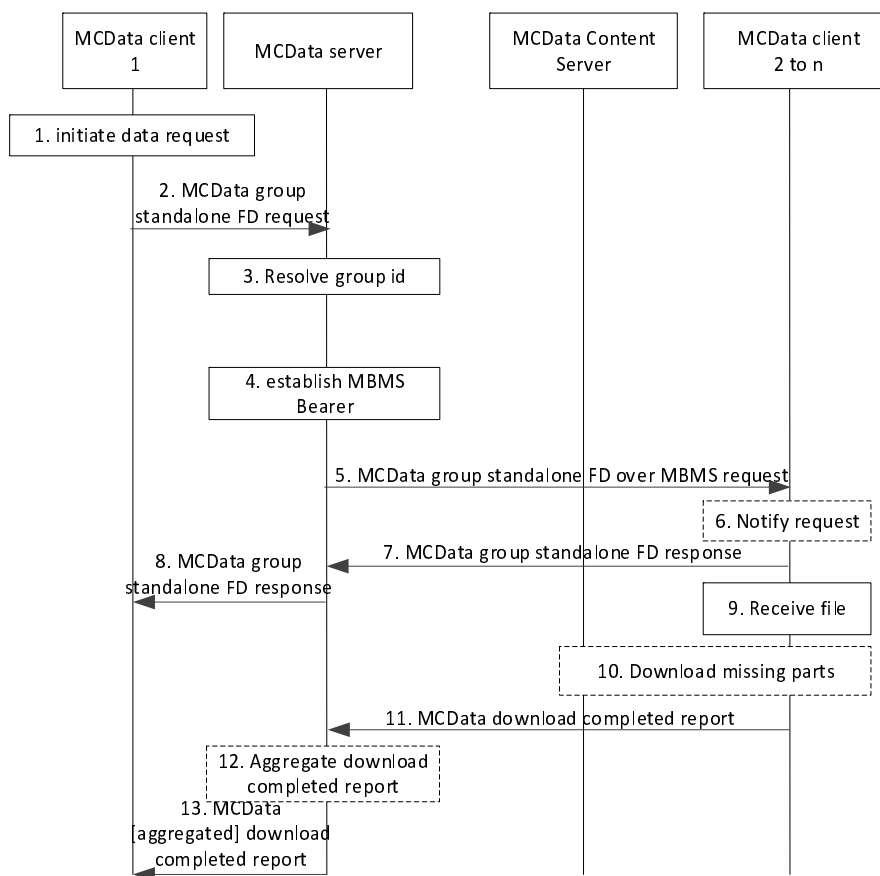


Figure 7.5.2.10.2-1: Group standalone FD using the MBMS download delivery method

- 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 MCDData user is upgrading a MCDData one-to-one FD communication to a MCDData emergency one-to-one FD communication. This procedure is applicable only when MCDData 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 MCDData system.
2. One-to-one FD communication is already in progress.

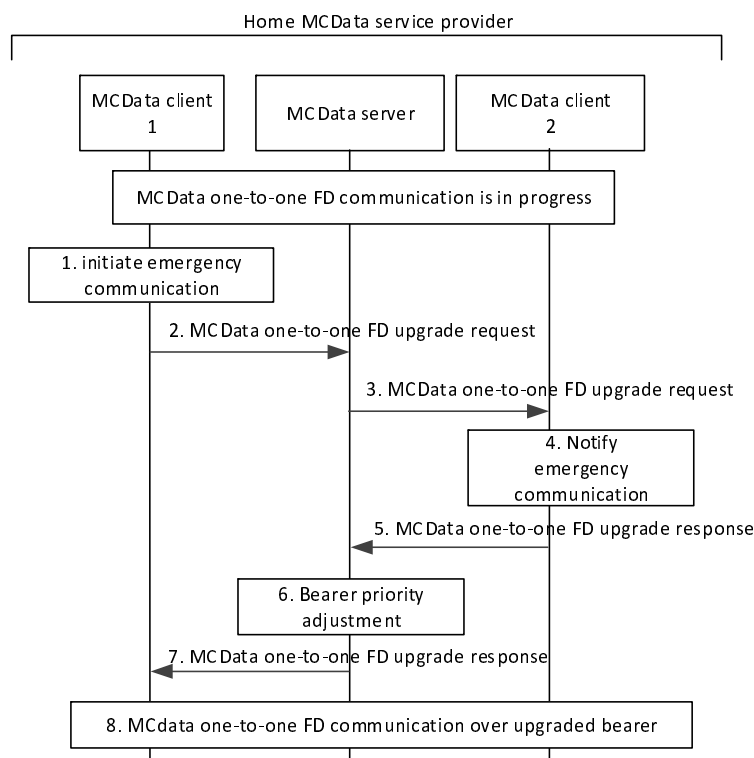


Figure 7.5.2.11.2-1 One-to-one FD communication upgrade to an emergency one-to-one FD communication

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

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

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

3. The MCDData server sends the MCDData one-to-one FD upgrade request towards MCDData client 2.

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

4. The MCDData user of MCDData client 2 is notified of the in-progress emergency of the MCDData emergency one-to-one FD communication.

5. The MCDData client 2 acknowledges the MCDData one-to-one FD upgrade request and sends MCDData one-to-one FD upgrade response to the MCDData server.

6. The MCDData server adjusts the priority of the underlying bearer for both participants of the MCDData one-to-one FD communication. The priority is retained until the communication ends.
7. The MCDData server sends MCDData one-to-one FD upgrade response to MCDData client 1.
8. MCDData client 1 and MCDData client 2 continue with the MCDData one-to-one FD communication, which has been transformed into an MCDData 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 MCDData group FD communication to an MCDData 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 MCDData user is upgrading an ongoing MCDData group FD communication to an MCDData emergency group FD communication. This procedure is applicable only when group MCDData 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 MCDData server is shown in place of a user home MCDData server and a group hosting MCDData server.

Pre-conditions:

1. The MCDData group is previously defined on the group management server with MCDData client 1, MCDData client 2 and MCDData client 3 are affiliated to that MCDData group.
2. All members of the MCDData group belong to the same MCDData system.
3. An MCDData group FD communication is already in progress.
4. The initiating MCDData client 1 has been configured to send an MCDData emergency alert when upgrading an MCDData emergency group communication.

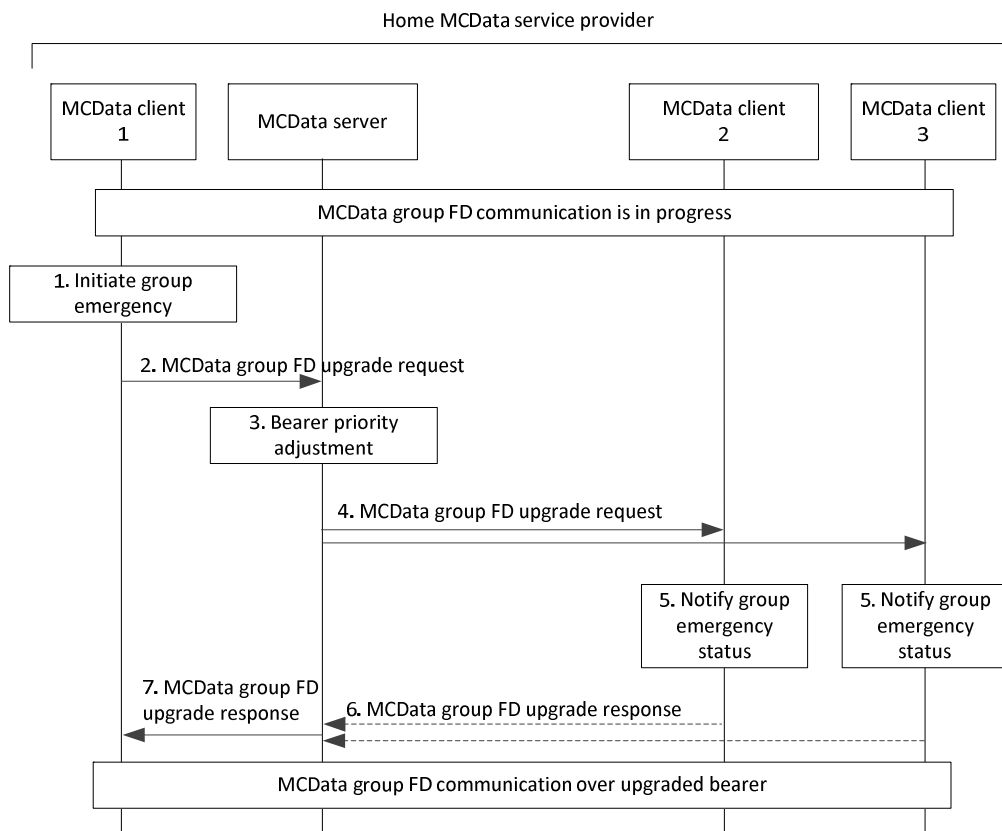


Figure 7.5.2.12.2-1: MCDATA group FD communication upgraded to an MCDATA emergency group FD communication

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 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 MCDData clients send the MCDData group FD upgrade response to the MCDData server to acknowledge the MCDData group emergency request. For a multicast call, these acknowledgements are not sent.
7. The MCDData server sends the MCDData group FD upgrade response to the MCDData 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.

MCDData client 1, MCDData client 2 and MCDData client 3 continue with the MCDData group FD communication, which has been transformed into an MCDData 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 MCDData 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 MCDData user cancels MCDData group's in-progress emergency.

Pre-conditions:

1. The MCDData group is previously defined on the group management server with MCDData client 1, MCDData client 2 and MCDData client 3 affiliated to that MCDData group.
2. All members of the MCDData group belong to the same MCDData system.
3. MCDData group members have been notified about the in-progress emergency.
4. The MCDData group is in the in-progress emergency state and has prioritized bearer support.
5. MCDData client 1 previously initiated the in-progress emergency for the group.

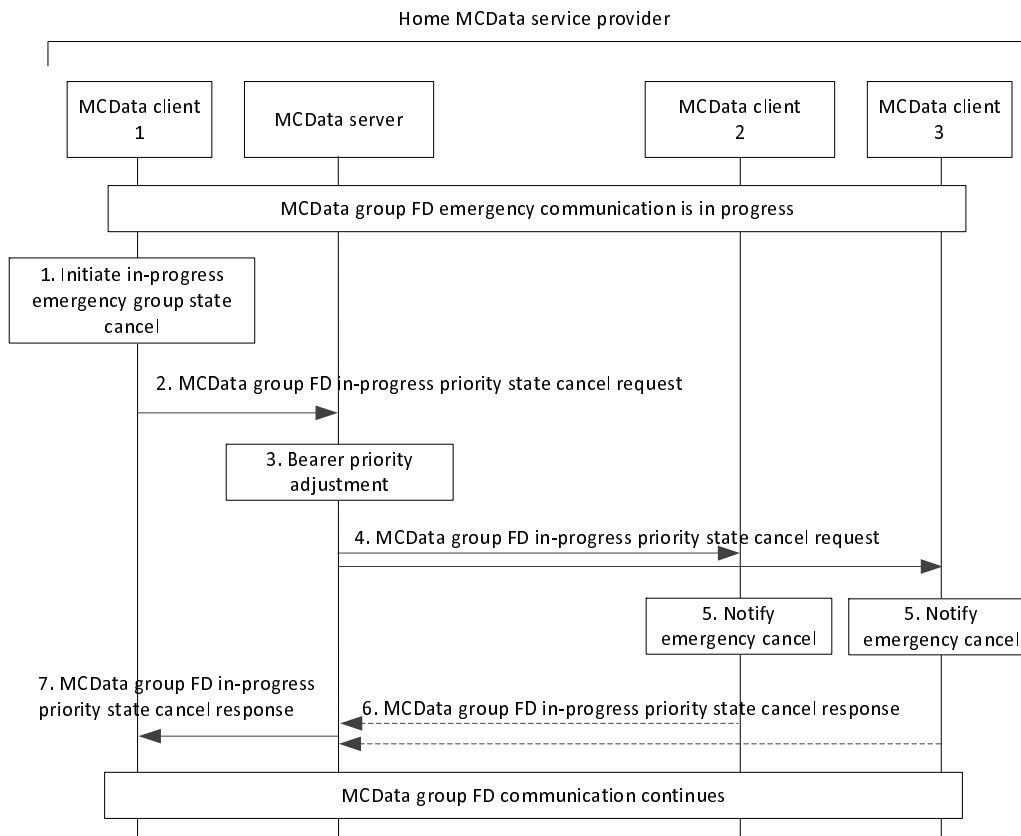


Figure 7.5.2.13.2-1: MCDATA group FD in-progress emergency group state cancel

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 MCDData server sends the MCDData group FD in-progress priority state cancel response to the MCDData user 1 to confirm the MCDData in-progress emergency group state cancel. If the MCDData in-progress emergency group state cancel request (in step 2) contained the "Alert indicator" IE, the MCDData 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 MCDData communication is established as described in subclause 7.5.2.7 "Group standalone file distribution using media plane". The MCDData 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 MCDData 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), MCDData users are notified of the in-progress imminent peril state of the MCDData 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 MCDData 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 MCDData client 1 sets the imminent peril indicator; and
- In step 5), MCDData 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 MCDData FD request (using media plane)

Table 7.5.3.2.1-1 describes the information flow for the MCDData FD request sent from the MCDData client to another MCDData client.

Table 7.5.3.2.1-1: MCDData FD request (using media plane)

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| MCDData ID | M | The identity of the MCDData user receiving the file |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData FD response (using media plane)

Table 7.5.3.2.2-1 describes the information flow for the MCDData FD response sent from the MCDData client to another MCDData client.

Table 7.5.3.2.2-1: MCDData FD response (using media plane)

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending FD request |
| MCDData ID | M | The identity of the MCDData 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 MCDData download completed report

Table 7.5.3.2.3-1 describes the information flow for the MCDData download completed report sent from the MCDData client to another MCDData client.

Table 7.5.3.2.3-1: MCDData download completed report

| Information element | Status | Description |
|--------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending FD request |
| MCDData ID | M | The identity of the MCDData user sending response |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Disposition association | M | Identifies the original MCDData transaction |
| Disposition confirmation | M | An indication that the client has completed downloading file |

7.5.3.2.4 MCDData group standalone FD request (using media plane)

Table 7.5.3.2.4-1 describes the information flow for the MCDData group standalone FD request sent from the MCDData client to another MCDData client.

Table 7.5.3.2.4-1: MCDData group standalone FD request (using media plane)

| Information element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending the file |
| MCDData group ID | M | The MCDData group ID to which the data is to be sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 MCDData group standalone FD response (using media plane)

Table 7.5.3.2.5-1 describes the information flow for the MCDData group standalone FD response sent from the MCDData client to another MCDData client.

Table 7.5.3.2.5-1: MCDData group standalone FD response (using media plane)

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending FD request |
| MCDData group ID | M | The MCDData group ID to which the file is to be sent |
| MCDData ID | M | The identity of the MCDData 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 MCDData client uses media plane for a standalone FD download from another MCDData client in off-network.

7.5.3.3.2 Procedure

Figure 7.5.3.3.2-1 describes procedures for an off-network MCDData client 1 initiating one-to-one MCDData data communication for sending standalone FD data to other MCDData client, with or without download completed report request.

Pre-conditions:

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

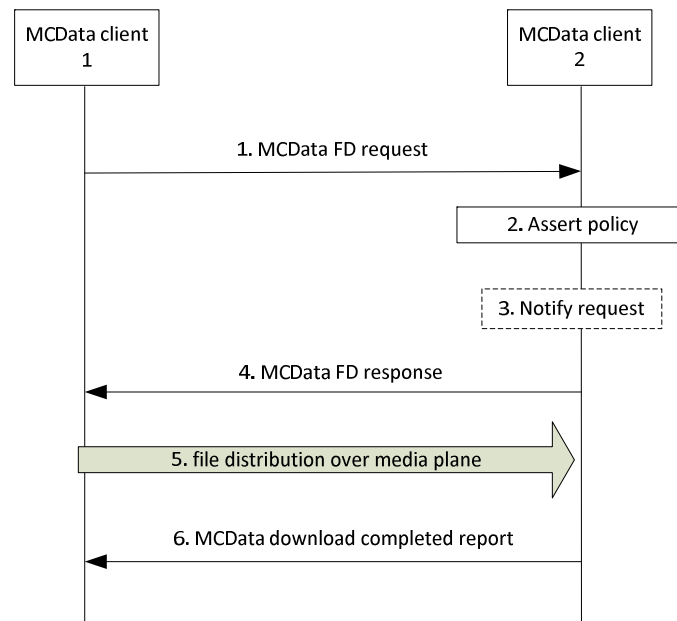


Figure 7.5.3.3.2-1: One-to-one standalone file distribution using media plane

1. MCDData client 1 sends a MCDData FD request towards the MCDData client 2. File metadata information is included in the SDP. The MCDData FD request contains one MCDData user for one-to-one data communication as selected by the user at MCDData client 1. The MCDData FD request contains conversation identifier for message thread indication. The MCDData FD request may include additional implementation specific information in the application metadata container. MCDData FD request may contain mandatory download indication. The MCDData FD request may contain download completed report indication if selected by the user at MCDData client 1.
2. On receiving a MCDData FD request, the MCDData 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 MCDData client 2 notifies the user about the incoming MCDData FD request which may be either accepted or rejected or ignored. MCDData user may not be sought consent if the request includes mandatory download indication in the MCDData FD request and instead only notify the MCDData user about file downloading.
4. If the target MCDData user 2 provides a response (accept or reject) to the notification, then the MCDData client 2 sends the MCDData FD response to the MCDData client 1. MCDData client 2 automatically sends accepted MCDData FD response when the incoming request included mandatory download indication.
5. MCDData client 1 distributes the file over the established media plane to MCDData client 2.
6. The MCDData client 2 records file download completed and notifies MCDData user 2. MCDData client 2 initiates a MCDData download completed report for reporting file download completed, if requested by the user at MCDData 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 MCDData 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 MCDData client 1 initiating group MCDData data communication for sending FD data to a MCDData group, with or without download completed report request.

Pre-conditions:

1. MCDData user 1 has initiated group communication for sending FD data to the MCDData group.

2. Information for ProSe direct communications corresponding to the MCDData group and its mapping to ProSe Layer-2 Group ID are pre-configured in MCDData client 1.
3. MCDData client 1 to MCDData client N are members of the same MCDData group.

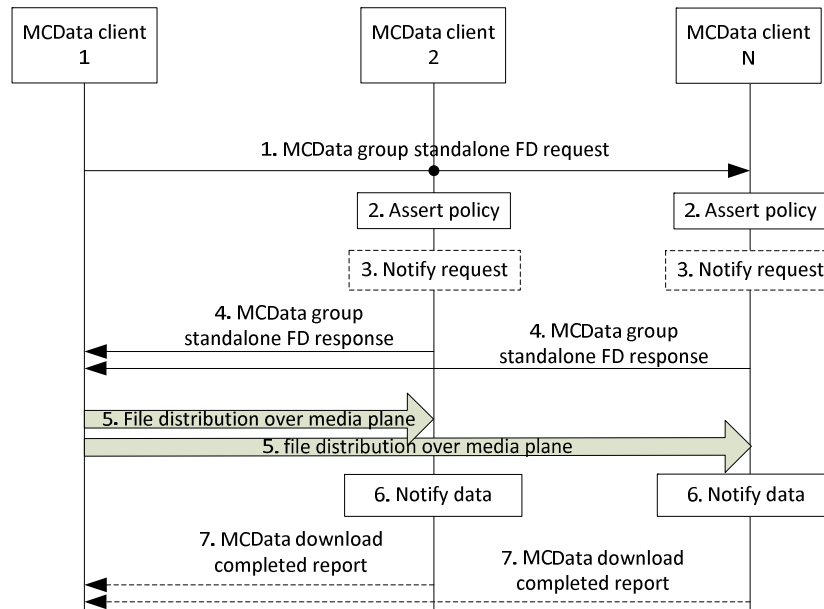


Figure 7.5.3.4.2-1: Group standalone file distribution using media plane

1. MCDData client 1 sends a MCDData FD request towards the MCDData group. File metadata information is included in the SDP. The MCDData group standalone data request contains MCDData group ID as selected by the user at MCDData client 1. The MCDData group standalone FD request contains conversation identifier for message thread indication. The MCDData group standalone FD request may include additional implementation specific information in the application metadata container. MCDData group standalone FD request may contain mandatory download indication. The MCDData group standalone FD request may contain download completed report indication if selected by the user at MCDData client 1.
2. On receiving a MCDData FD request, the MCDData 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 MCDData clients 2 to n notifies the user about the incoming MCDData group standalone FD request which may be either accepted or rejected or ignored. MCDData user may not be sought consent if the request includes mandatory download indication in the MCDData group standalone FD request and instead only notify the MCDData user about file downloading.
4. If the target MCDData user on MCDData clients 2 to n provides a response (accept or reject) to the notification, then the respective MCDData client sends the MCDData group standalone FD response to the MCDData client 1. MCDData client 2 to n automatically sends accepted MCDData group standalone FD response when the incoming request included mandatory download indication.
5. MCDData client 1 and MCDData client 2 to n have successfully established media plane for file transmission and the MCDData client 1 transmits the file data.
6. The MCDData client 2 to n successfully receiving the file, records file download completed and notifies MCDData users.
7. MCDData client 2 to n initiate a MCDData download completed report for reporting file download completed, if requested by the user at MCDData client 1.

7.6 Transmission and reception control

7.6.1 General

Based on the configurations (available in MCDData user profile, group configuration and service configuration), the MCDData transmission and reception control provides a necessary capability for an authorized user of the MCDData 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 MCDData control indication

Table 7.6.2.1.1-1 describes the information flow for the MCDData control indication sent from the MCDData server to the MCDData client.

Table 7.6.2.1.1-1: MCDData control indication

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user towards which the control indication is sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Control indication type | M | One of the following: - No permission to transmit data - No affiliated members found to the selected MCDData 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 MCDData indication

Table 7.6.2.1.2-1 describes the information flow for the MCDData indication sent from the MCDData server to the MCDData client.

Table 7.6.2.1.2-1: MCDData indication

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user towards which the MCDData indication is sent |
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Deferred data list | M | List of references to deferred data awaiting download |

7.6.2.1.3 MCDData get deferred list request

Table 7.6.2.1.3-1 describes the information flow for the MCDData get deferred list request sent from the MCDData client to the MCDData server.

Table 7.6.2.1.3-1: MCDData get deferred list request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user requesting deferred list |

7.6.2.1.4 MCDData get deferred list response

Table 7.6.2.1.4-1 describes the information flow for the MCDData get deferred list response sent from the MCDData server to the MCDData client.

Table 7.6.2.1.4-1: MCDData get deferred list response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData client to the receiving MCDData client without any request/grant procedure or any explicit actions on the part of the receiving MCDData client.

7.6.2.2.2 Procedure

The procedure in figure 7.6.2.2.2-1 describes the case where MCDData SDS is automatically transmitted to the selected recipient user or affiliated members of the selected MCDData group.

Pre-conditions:

1. MCDData user is configured with permission to transmit data.
2. Optionally, MCDData client may have an activated functional alias to be used.
3. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

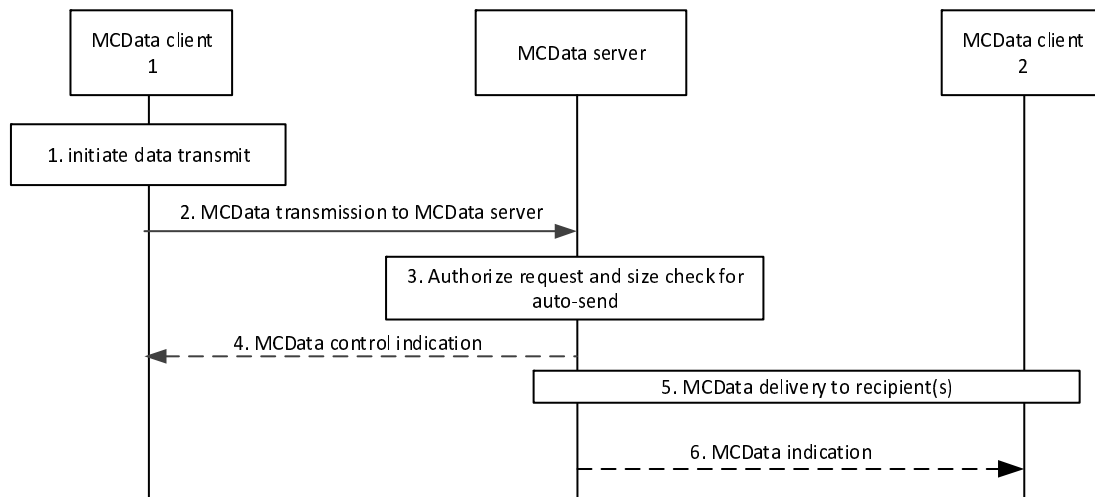


Figure 7.6.2.2.2-1: Automatic transmission for SDS

1. MCDData user selects the data to transmit and the recipient MCDData user or MCDData group. The MCDData user at MCDData client 1 may include a functional alias used within the SDS data transmission.
2. MCDData client checks for MCDData user's permission to transmit data and checks if the data size is less than the maximum data size for SDS. MCDData 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 MCDData server verifies if the MCDData user is authorized to transmit and the data size in the received transmission request does not exceed the maximum data size for SDS. MCDData server

verifies whether the provided functional alias, if present, can be used and has been activated for the MCDData user.

4. MCDData server may send one of the following MCDData control indications:

- a) If the MCDData user does not have permission to transmit data to another MCDData user or MCDData group then the "No permission to transmit data" control indication is sent.
- b) If the selected transmission is for a MCDData group and there are no affiliated group members, then the transmission control on MCDData server sends the "No affiliated members found to the selected MCDData group" control indication.
- c) MCDData server may queue the data transmit request for later transmission with control indication "Request to transmit is queued".

Otherwise continue with step 5.

5. MCDData server automatically transmits the data and, if available, the functional alias of the originating MCDData client 1 to the selected MCDData user or the affiliated members or all group members (in the case of lossless communication) of the selected MCDData group according to the procedures selected in step 2.
6. The MCDData 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 MCDData 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 MCDData client waiting to receive the temporarily stored data receives MCDData 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 MCDData user may be informed in MCDData 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 MCDData client to send data to a receiving MCDData client, where the receiving MCDData 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 MCDData 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 MCDData group for mandatory download.

Pre-conditions:

1. MCDData user is configured with permission to transmit data.
2. MCDData administrator has configured maximum data size for FD.
3. Maximum amount of data that a MCDData user can transmit in a single request is configured.
4. Maximum amount of time that a MCDData user can transmit in a single request is configured.
5. Optionally, MCDData client may have an activated functional alias to be used.
6. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

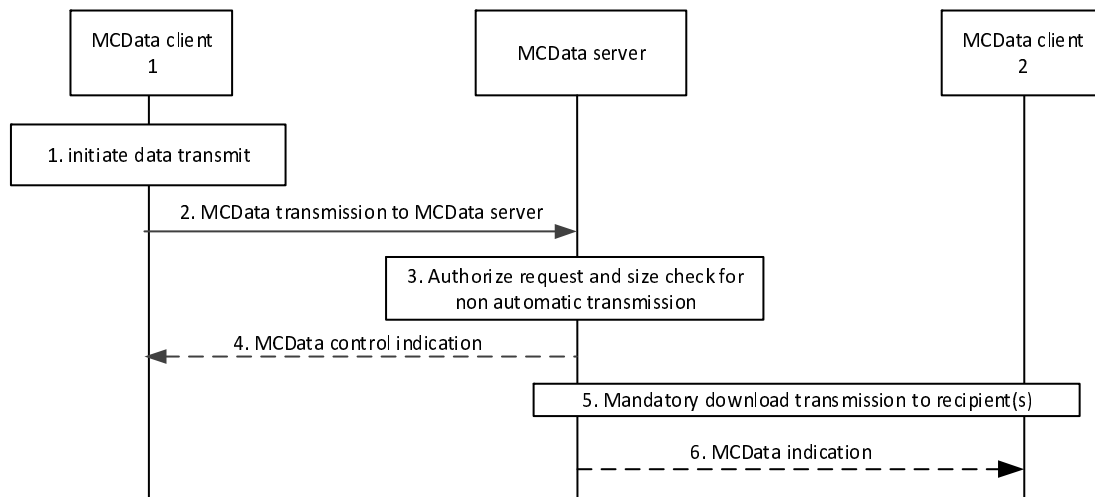


Figure 7.6.2.3.2-1: Send data with mandatory download

1. MCDData user selects the data to transmit, the recipient MCDData user or MCDData group and the indication for mandatory download. The MCDData user at MCDData client 1 may include a functional alias used within the FD data transfer.
2. MCDData client has checked for MCDData user's permission to transmit data. MCDData 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 MCDData server verifies if the MCDData 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 MCDData user can transmit in a single request. MCDData server verifies whether the provided functional alias, if present, can be used and has been activated for the MCDData user.
4. MCDData server may send one of the following MCDData control indications:
 - a) If the MCDData user does not have permission to transmit data to another MCDData user or MCDData 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 MCDData user can transmit in a single request, the transmission control on MCDData 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 MCDData user can transmit in a single request, the transmission control on MCDData 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 MCDData group and there are no affiliated group members, then the transmission control on MCDData server sends the "No affiliated members found to the selected MCDData group" control indication.
 - e) MCDData server may queue the data transmit request for later transmission with control indication "Request to transmit is queued".

Otherwise continue with step 5.

5. MCDData server transmits the data and, if available, the functional alias of the originating MCDData client 1 to the selected MCDData user or the affiliated members or all group members (in the case of lossless communication) of the selected MCDData group according to the procedures selected in step 2 (where the recipient MCDData client receives the data automatically).
6. The MCDData 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 MCDData 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 MCDData client waiting to receive the temporarily stored data receives MCDData 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 MCDData user may be informed in MCDData 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 MCDData 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 MCDData client.

7.6.2.4.2 Procedure

The procedure in figure 7.6.2.4.2-1 describes the case where MCDData user selected data is subjected to transmission control prior to transmitting data to the selected recipient user or affiliated members of the selected MCDData group for downloading with recipient MCDData user consent.

Pre-conditions:

1. MCDData user is configured with permission to transmit data.
2. Maximum amount of data or time that an MCDData 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, MCDData client may have an activated functional alias to be used.
5. The MCDData server may have subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.

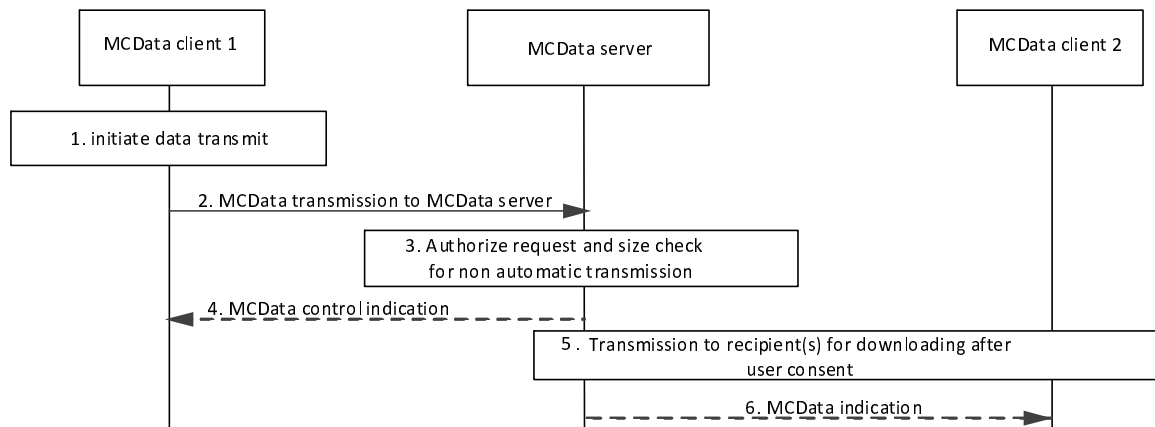


Figure 7.6.2.4.2-1: Send data without mandatory download

1. MCDData user selects the data to transmit and the recipient MCDData user or MCDData group and does not select the mandatory download indication. The MCDData user at MCDData client 1 may include a functional alias used within the data transmission.
2. MCDData client has checked for MCDData user's permission to transmit data and the data size is within the maximum data size allowed. The MCDData 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 MCDData server verifies if the MCDData 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 MCDData user can transmit in a single request. MCDData server verifies whether the provided functional alias, if present, can be used and has been activated for the MCDData user.
4. MCDData server may send one of the following control indications:
 - a) If the MCDData user does not have permission to transmit data to another MCDData user or MCDData group then the "No permission to transmit data" control indication is sent.
 - b) If the selected transmission is for a MCDData group and there are no affiliated group members, then the transmission control on MCDData server sends the "No affiliated members found to the selected MCDData group" control indication.
 - c) If the data size requested to be transmitted is more than the maximum amount of data that an MCDData user can transmit in a single request, the transmission control on MCDData 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 MCDData user can transmit in a single request (applies to DS only), the transmission control on MCDData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".
 - e) MCDData 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. MCDData server transmits the data and, if available, the functional alias of the originating MCDData client 1 to the selected MCDData user or the affiliated members or all group members (in the case of lossless communication) of the selected MCDData group according to the procedures selected in step 2 (where the recipient MCDData client may receive the data automatically).
6. The MCDData 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 MCDData 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 MCDData client waiting to receive the temporarily stored data receives MCDData 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 MCDData user may be informed in MCDData 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 MCDData 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 MCDData client receives the list of available temporarily stored data waiting to download for the deferred data group communications.

Pre-conditions:

1. MCDData server has temporarily stored data for the deferred data group communications e.g. due to recipient MCDData client deferred to download.

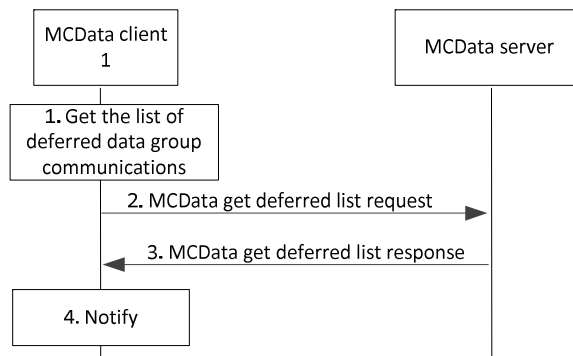


Figure 7.6.2.5.2-1: Accessing list of deferred data group communications

1. MCDData user initiates the request to get the list of temporarily stored data for the deferred data group communications on the MCDData server e.g. due to recipient MCDData client deferred to download.
2. MCDData client sends a MCDData get deferred list request to the MCDData server.
3. MCDData server generates the list of temporarily stored data for the affiliated group(s), available to download for the requesting MCDData client and sends the list in the MCDData get deferred list response.
4. MCDData client notifies the list of temporarily stored data for the deferred data group communications, upon which the MCDData user may decide to retrieve the corresponding data.

7.7 Communication release

7.7.1 General

The subclauses below describe the MCDData communication release procedures, which may be initiated either by the sender or the MCDData server or the authorized MCDData user.

7.7.2 Communication release for on-network

7.7.2.1 Information flows for communication release

7.7.2.1.1 MCDData communication release request (one-to-one communication using media plane)

Table 7.7.2.1.1-1 describes the information flow for the MCDData communication release request (in subclause 7.7.2.2.2.2) sent from the MCDData client to the MCDData server and from the MCDData server to another MCDData client.

Table 7.7.2.1.1-1: MCDData communication release request (one-to-one communication using media plane)

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user uploading data |
| MCDData ID | M | MCDData ID on which the communication is to be released |

7.7.2.1.2 MCDData communication release response (one-to-one communication using media plane)

Table 7.7.2.1.2-1 describes the information flow for the MCDData communication release response (in subclause 7.7.2.2.2.2) sent from the MCDData client to the MCDData server and from the MCDData server to another MCDData client.

Table 7.7.2.1.2-1: MCDData communication release response (one-to-one communication using media plane)

| Information element | Status | Description |
|----------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user requesting to upload data |
| MCDData ID | M | MCDData ID on which the communication is released |
| Release confirmation | M | Communication released or not indication |

7.7.2.1.3 MCDData communication release request (group communication using media plane)

Table 7.7.2.1.3-1 describes the information flow for the MCDData communication release request (in subclause 7.7.2.2.2.2) sent from the MCDData client to the MCDData server and from the MCDData server to another MCDData client.

Table 7.7.2.1.3-1: MCDData communication release request (group communication using media plane)

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user uploading data |
| MCDData group ID | M | MCDData group ID on which the communication is to be released |

7.7.2.1.4 MCDData communication release response (group communication using media plane)

Table 7.7.2.1.4-1 describes the information flow for the MCDData communication release response (in subclause 7.7.2.2.2.2) sent from the MCDData client to the MCDData server and from the MCDData server to another MCDData client.

Table 7.7.2.1.4-1: MCDData communication release response (group communication using media plane)

| Information element | Status | Description |
|----------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user requesting to upload data |
| MCDData group ID | M | MCDData 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 MCDData server communication release request (one-to-one communication using media plane)

Table 7.7.2.1.8-1 describes the information flow for MCDData server communication release request (in subclause 7.7.2.3.2.2) sent from the MCDData server to the MCDData clients involved in one-to-one communication.

Table 7.7.2.1.8-1: MCDData server communication release request (one-to-one communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData server communication release response (one-to-one communication using media plane)

Table 7.7.2.1.9-1 describes the information flow for the MCDData server communication release response (in subclause 7.7.2.3.2.2) sent from the MCDData client to the MCDData server.

Table 7.7.2.1.9-1: MCDData server communication release response (one-to-one communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | MCDData 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 MCDData server communication release request (group communication using media plane)

Table 7.7.2.1.10-1 describes the information flow for MCDData server communication release request (in subclause 7.7.2.3.2.2) sent from the MCDData server to the MCDData clients involved in group communication.

Table 7.7.2.1.10-1: MCDData server communication release request (group communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user to which communication is released |
| MCDData group ID | M | MCDData 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 MCDData server communication release response (group communication using media plane)

Table 7.7.2.1.11-1 describes the information flow for the MCDData server communication release response (in subclause 7.7.2.3.2.2) sent from the MCDData client to the MCDData server.

Table 7.7.2.1.11-1: MCDData server communication release response (group communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | MCDData ID to which the communication is released |
| MCDData group ID | M | MCDData 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 MCDData release intent request (one-to-one communication using media plane)

Table 7.7.2.1.13-1 describes the information flow for MCDData release intent request (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCDData server to the MCDData client.

Table 7.7.2.1.13-1: MCDData release intent request (one-to-one communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user who is originator of the one-to-one communication |
| Conversation Identifier | M | Identifies the conversation |
| Request for more info | O | Indicates what MCDData 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 MCDData more information response (one-to-one communication using media plane)

Table 7.7.2.1.14-1 describes the information flow for MCDData more information response (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCDData client to the MCDData server and from MCDData server to authorized MCDData user.

Table 7.7.2.1.14-1: MCDData more information response (one-to-one communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user who is originator of the one-to-one communication |
| Conversation Identifier | M | Identifies the conversation |
| More info | M | Information as requested by MCDData server |

7.7.2.1.15 MCDData release intent request (group communication using media plane)

Table 7.7.2.1.15-1 describes the information flow for MCDData release intent request (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCDData server to the MCDData client.

Table 7.7.2.1.15-1: MCDData release intent request (group communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user who is the originator of the group communication |
| Conversation Identifier | M | Identifies the conversation |
| MCDData group ID | M | MCDData group ID on which the communication is released |
| Request for more info | O | Indicates what MCDData server needs more information about the communication which has been identified to be released |

7.7.2.1.16 MCDData more information response (group communication using media plane)

Table 7.7.2.1.16-1 describes the information flow for MCDData more information response (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCDData client to the MCDData server and from MCDData server to authorized MCDData user.

Table 7.7.2.1.16-1: MCDData more information response (group communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user who is originator of the group communication |
| Conversation Identifier | M | Identifies the conversation |
| MCDData group ID | M | MCDData group ID on which the communication is released |
| More info | M | Information as requested by MCDData server |

7.7.2.1.17 MCDData auth user communication release request (one-to-one communication using media plane)

Table 7.7.2.1.17-1 describes the information flow for MCDData auth user communication release request (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the authorized MCDData user to the MCDData server.

Table 7.7.2.1.17-1: MCDData 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 MCDData 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 MCDData 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 MCDData server communication release response (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the MCDData server to the authorized MCDData user.

Table 7.7.2.1.18-1: MCDData 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 MCDData auth user communication release request (group communication using media plane)

Table 7.7.2.1.19-1 describes the information flow for MCDData auth user communication release request (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the authorized MCDData user to the MCDData server.

Table 7.7.2.1.19-1: MCDData auth user communication release request (group communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| Conversation Identifier | M | Identifies the conversation |
| MCDData group ID | M | MCDData group ID on which the communication is to be released |
| Request for more info | O | Indicates what MCDData 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 MCDData auth user communication release response (group communication using media plane)

Table 7.7.2.1.20-1 describes the information flow for the MCDData server communication release response (in subclause 7.7.2.5.2, 7.7.2.6.2) sent from the MCDData server to the authorized MCDData user.

Table 7.7.2.1.20-1: MCDData auth user communication release response (group communication using media plane)

| Information element | Status | Description |
|-------------------------|--------|---|
| Conversation Identifier | M | Identifies the conversation |
| MCDData group ID | M | MCDData group ID on which the communication is to be released |
| Release confirmation | M | Communication released or not indication |

7.7.2.1.21 MCDData request for extension

Table 7.7.2.1.21-1 describes the information flow for the MCDData request for extension (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the MCDData client to the MCDData server and from MCDData server to authorized MCDData user.

Table 7.7.2.1.21-1: MCDData request for extension

| Information element | Status | Description |
|-------------------------|--------|-----------------------------|
| Conversation Identifier | M | Identifies the conversation |

7.7.2.1.22 MCDData response for extension

Table 7.7.2.1.22-1 describes the information flow for the MCDData response for extension (in subclause 7.7.2.4.2, 7.7.2.6.2) sent from the authorized MCDData user to the MCDData server and MCDData client to the MCDData server and from MCDData server to MCDData client.

Table 7.7.2.1.22-1: MCDData 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 MCDData user initiated communication release

7.7.2.2.1 General

During MCDData communication, a transmitting participant can at any time indicate to stop transmission to the MCDData server.

7.7.2.2.2 Release of MCDData communication using media plane

7.7.2.2.2.1 General

The subclause describes the procedure for MCDData user initiated MCDData communication release where MCDData communication is established as SDS using media plane or SDS session or file distribution using media plane.

NOTE: The release of MCDData communication over MBMS is out of scope of the current specification.

7.7.2.2.2.2 Procedure

The procedure in figure 7.7.2.2.2-1 describes signalling control plane procedure for the case where MCDData communication is ongoing and transmitting participant initiates MCDData communication release. The procedure is applicable for one-to-one and group MCDData communications.

Pre-conditions:

1. MCDData users on MCDData client 1 and client 2 are already registered for receiving MCDData service.
2. MCDData communication is established between MCDData client 1 and MCDData client 2 and MCDData client1 is the initiator of the MCDData communication.

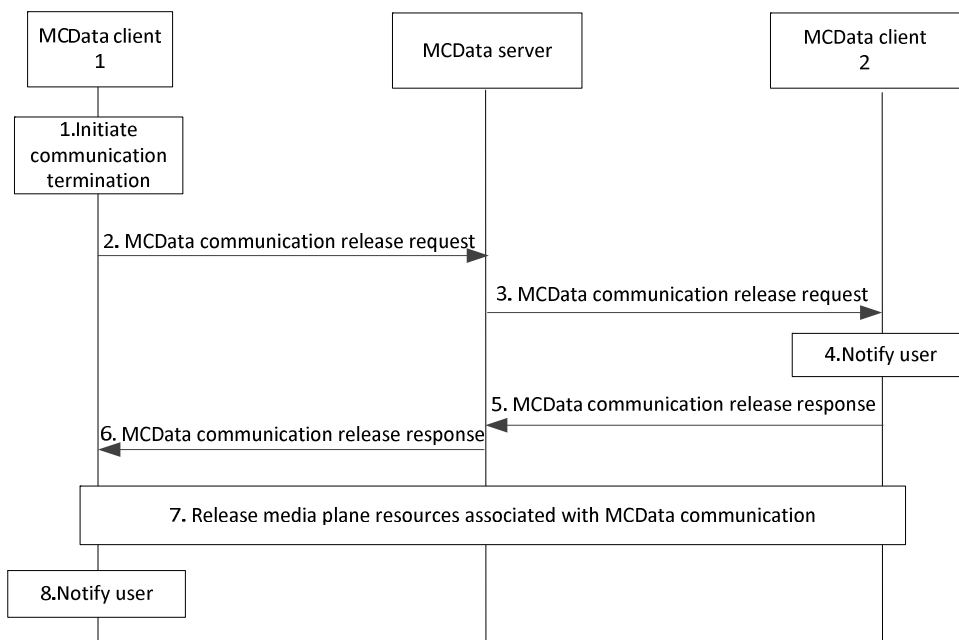


Figure 7.7.2.2.2-1: Release of MCDData communication using media plane

1. MCDData user at MCDData client 1 requests to release ongoing MCDData communication.
2. MCDData client 1 sends MCDData communication release request towards MCDData server, for tearing down the communication with the other MCDData client(s).
3. MCDData server sends MCDData communication release request to all the participants of the MCDData communication.
4. Recipient MCDData clients notifies respective MCDData user about the release of MCDData communication.
5. MCDData clients receiving the MCDData communication release request provide communication release response back towards MCDData server.
6. MCDData server sends MCDData communication release response back to MCDData client 1.
7. All participants of the MCDData communication have successfully released the media plane resources associated with the MCDData communication that is released.
8. MCDData client 1 notifies the MCDData user about the communication release.

7.7.2.2.3 Release of MCDData communication using HTTP

NOTE: The backward compatibility handling of this procedure is outside the scope of the present document.

7.7.2.3 MCDData server initiated communication release without prior indication

7.7.2.3.1 General

MCDData server initiates the release of an ongoing MCDData 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, MCDData server either pre-empts the MCDData communication without giving prior indication to MCDData client or notifies the intent of release to the MCDData client initiating communication. Latter scenario allows the MCDData user to request for extension of MCDData communication and defer the communication release.

7.7.2.3.2 Release of MCDData communication using media plane

7.7.2.3.2.1 General

The subclause describes the procedure for MCDData server initiated MCDData communication release without prior indication, where MCDData communication is established as SDS using media plane or file distribution using media plane.

NOTE: The release of MCDData 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 MCDData communication, based on communication release conditions, MCDData server initiates the communication release. The procedure is applicable for one-to-one and group communication.

Pre-conditions:

1. MCDData users on MCDData client 1, client 2 and client 3 are already registered for receiving MCDData service.
2. A MCDData 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 MCDData communication is ongoing between MCDData client 1, client 2 and client 3.

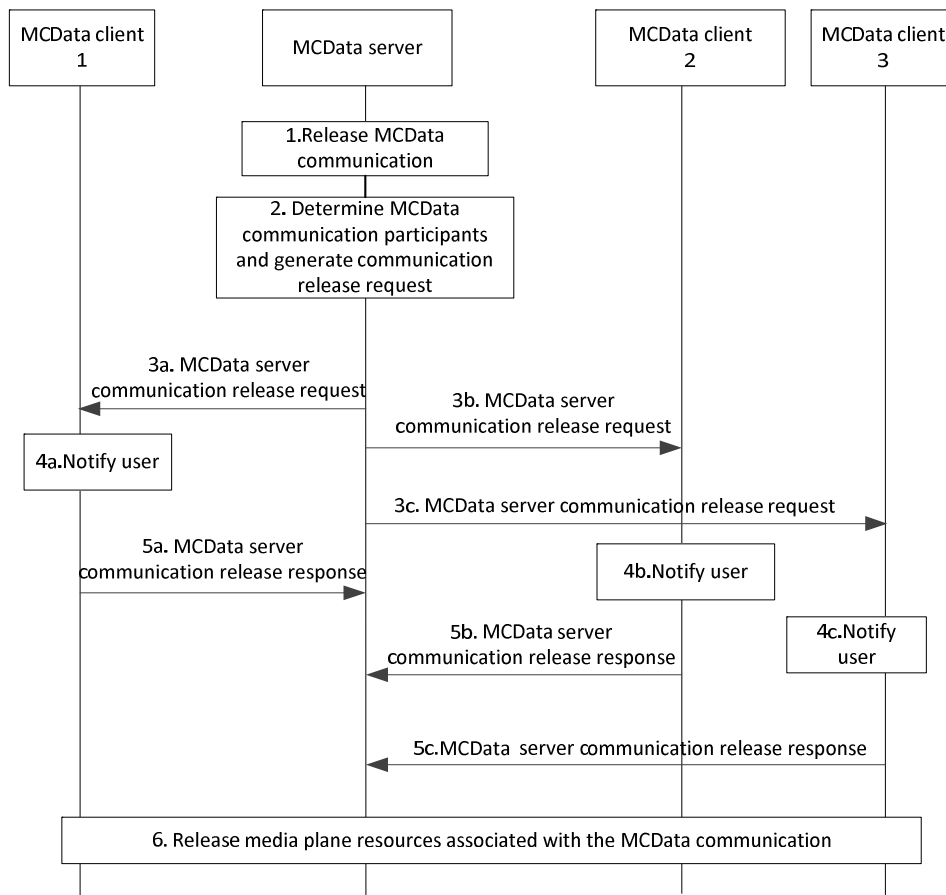


Figure 7.7.2.3.2.2-1: MCDATA server initiated release of MCDATA communication using media plane

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 MCDData server initiated communication release with prior indication

7.7.2.4.1 General

The subclause describes the procedure for MCDData server initiated MCDData communication release with prior indication, where MCDData 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 MCDData communication, based on communication release conditions, MCDData server initiates communication release. As a result of configuration check, MCDData server notifies the intent to release MCDData communication, optionally requesting for more information (e.g. to know the remaining data volume to transmit) from the MCDData client initiating MCDData communication.

Pre-conditions:

1. MCDData user on MCDData client 1 is already registered for receiving MCDData service.
2. MCDData administrator has configured the limits for the maximum amount of data and time that a participant transmits from a single request to transmit.
3. MCDData communication may be ongoing between MCDData participants and MCDData client 1 is the initiator of the communication.
4. MCDData administrator has configured the time for which MCDData server needs to wait for extension request from the MCDData user.

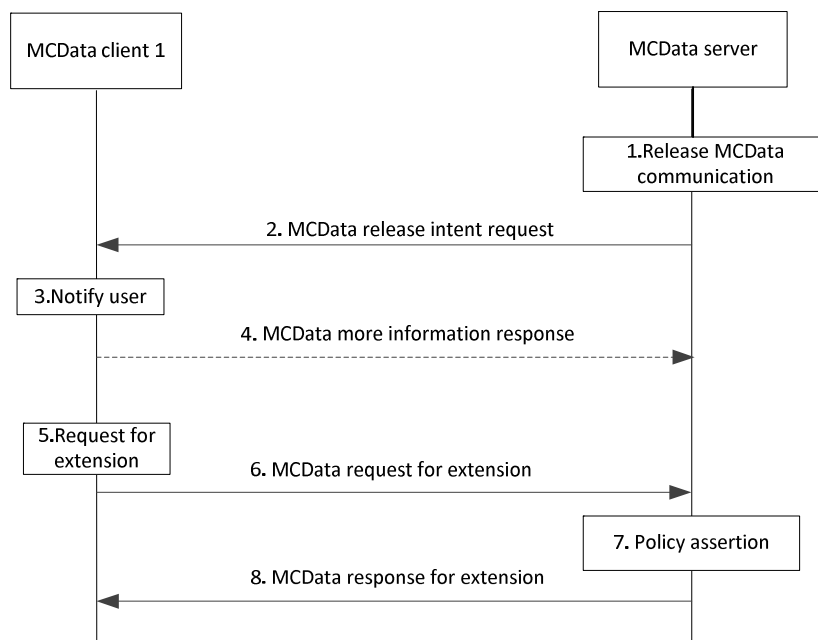


Figure 7.7.2.4.2-1: MCDData server initiates communication release with prior indication

1. MCDData server releases the ongoing MCDData 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, MCDData server notifies the intent to release MCDData communication.

2. MCDData server sends the MCDData release intent request towards the communication initiating MCDData client 1. MCDData server may include request for more information (e.g. to know the remaining data volume to transmit).
3. MCDData client 1 informs MCDData user about the intent to release communication.
4. If request for more information is included in the received MCDData release intent request, MCDData client 1 sends MCDData more information response including the remaining amount of data to transmit. Upon receiving more information response from MCDData client 1, MCDData server may wait for the request for extension until the time configured by the MCDData administrator. If MCDData server does not receive MCDData request for extension within the configured timeout, the MCDData server releases MCDData communication as described in subclause 7.7.2.3. Otherwise, continue with remaining steps.
5. MCDData user at MCDData client 1 requests for extension of the ongoing MCDData communication.
6. MCDData client 1 sends MCDData request for extension of the MCDData communication.
7. Upon receiving the MCDData request for extension of MCDData communication from the MCDData client 1, MCDData server asserts policies to accept or reject the request for extension.
8. MCDData server sends MCDData response for extension with success or failure result to MCDData client 1. MCDData communication will continue if MCDData server accepted the request for extension from MCDData client 1. Otherwise, MCDData communication is released according to procedures described in subclause 7.7.2.3.

7.7.2.5 Authorized MCDData user initiated communication release without prior indication

7.7.2.5.1 General

An authorized MCDData user at any time during an ongoing MCDData communication decides to release communication. The authorized user may decide to release MCDData communication without prior indication to the initiator MCDData 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 MCDData communication, authorized MCDData user initiates MCDData communication release without prior indication to the initiator MCDData client. An authorized MCDData user is part of the ongoing MCDData communication.

Pre-conditions:

1. An authorized MCDData user on MCDData client is already registered for receiving MCDData service.
2. A MCDData communication is ongoing between MCDData participants and authorized MCDData user is keeping track of which participants are receiving communication e.g. through "message delivered" and/or "message read" indications for the MCDData communication.

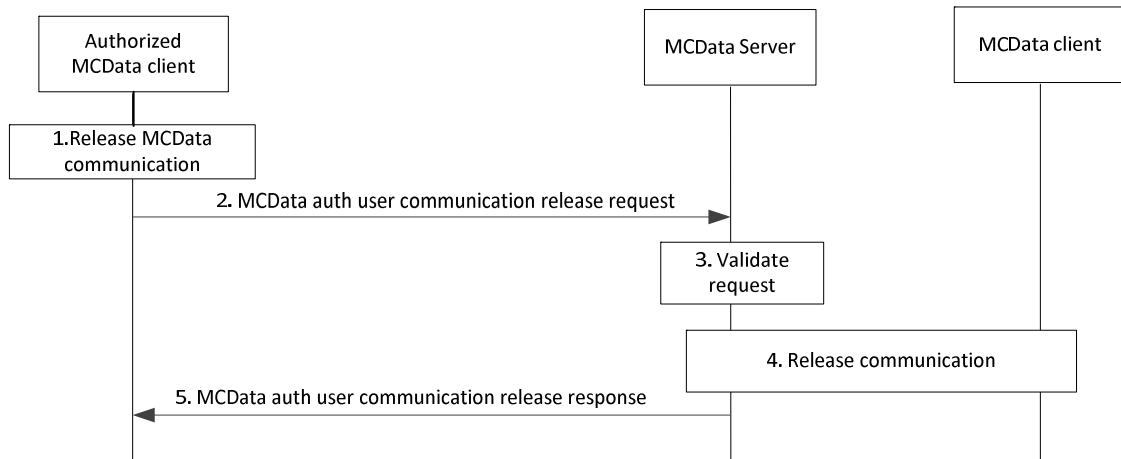


Figure 7.7.2.5.2-1: An authorized MCDData user initiates communication release without prior indication

1. An authorized MCDData user requests to release the ongoing MCDData communication, without providing prior indication to the initiator of the MCDData communication, MCDData client 1.
2. An authorized MCDData client sends MCDData auth user communication release request towards MCDData server identifying the MCDData communication to release. The request also includes indication to the MCDData server to release MCDData communication without prior indication to the initiator of the MCDData communication, MCDData client 1.
3. MCDData server validates the user from whom the MCDData communication release request is received and checks whether the requesting MCDData user is authorized to release communication or not.
4. If the user is authorized to release communication, then MCDData server releases the ongoing MCDData communication according to procedures described in subclause 7.7.2.3.
5. MCDData server sends MCDData auth user communication release response containing the result of MCDData communication release back to authorized MCDData client 1.

7.7.2.6 Authorized MCDData user initiated communication release with prior indication

7.7.2.6.1 General

An authorized MCDData user at any time during an ongoing MCDData communication decides to release communication. The authorized user may decide to release MCDData communication with prior indication to the initiator MCDData client. A prior indication allows initiator MCDData client to request for extension for the MCDData 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 MCDData communication, authorized MCDData user initiates MCDData communication release with prior indication to the initiator MCDData client. An authorized MCDData user is part of the ongoing MCDData communication. An initiator MCDData user optionally decides to request for the extension of the ongoing communication.

Pre-conditions:

1. An authorized MCDData user on MCDData client is already registered for receiving MCDData service.
2. A MCDData communication is ongoing between MCDData participants and authorized MCDData user is keeping track of which participants are receiving communication e.g. through "message delivered" and/or "message read" indications for the MCDData communication
3. MCDData client 1 is the initiator of the MCDData communication.

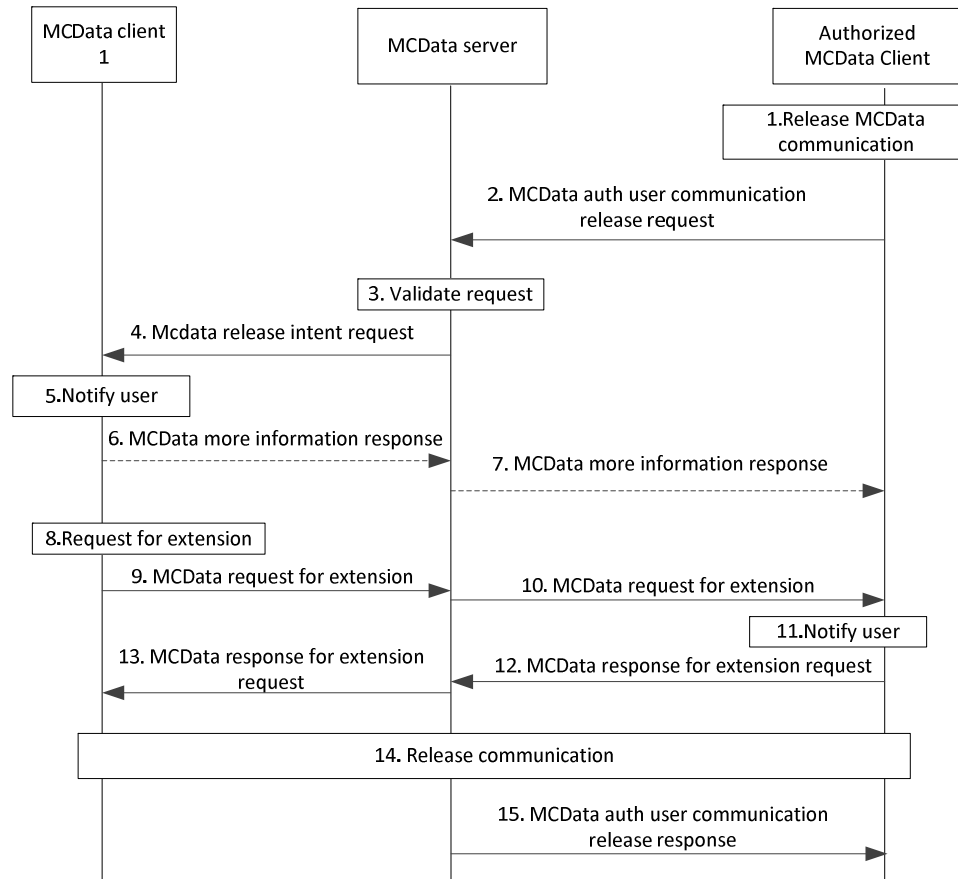


Figure 7.7.2.6.2-1: An authorized MCDData user initiates communication release with prior indication

1. An authorized MCDData user requests to release the ongoing MCDData communication by providing prior indication to the initiator of MCDData communication, MCDData client 1.
2. An authorized MCDData client sends MCDData auth user communication release request towards MCDData server including the communication identifier identifying the MCDData communication to release. Authorized MCDData client may include request for more information (e.g. to know the remaining data volume to transmit). The request also includes indication to MCDData server to release MCDData communication with prior indication to the initiator MCDData client.
3. MCDData 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 MCDData server sends MCDData release intent request, may be including the reason for the release. MCDData server may include request for more information as received in the request from the authorized MCDData client.
5. MCDData client informs MCDData user about the intent to release communication by the authorized MCDData user.
6. If request for more information is included in the received MCDData release intent request, MCDData client 1 sends MCDData more information response including the remaining amount of data to transmit.
7. MCDData server forwards the MCDData more information response to the authorized MCDData client.

NOTE: Upon receiving more information response from MCDData client 1, MCDData server may wait for the request for extension until the time configured by the MCDData administrator. If MCDData server does not receive request for extension within the configured timeout, the MCDData server releases MCDData communication as described in subclause 7.7.2.3. Otherwise, continue with remaining steps.

8. MCDData user at MCDData client 1 decides to request for extension of the ongoing MCDData communication.

- 9 and 10. MCDData client sends MCDData request for extension towards MCDData server. And MCDData server forwards the MCDData request for extension towards the authorized MCDData client.
11. Authorized MCDData client notifies the authorized user about the incoming request for extension. An authorized MCDData user decides to accept or reject the request for extension.
- 12 and 13. Authorized MCDData user decision is sent in MCDData response for extension request towards the MCDData server. MCDData server forwards the MCDData response for extension request to MCDData client 1.
14. MCDData communication will continue if the authorized user accepted the request for extension from MCDData client 1. Otherwise, MCDData communication will be released according to procedures described in subclause 7.7.2.3.
15. After MCDData communication is released, MCDData server sends the MCDData auth user communication release response back to the authorized MCDData client.

7.8 Conversation management

7.8.1 General

Conversation management is a collection of related MCDData 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 MCDData user to associate multiple MCDData transmissions between a pair of users for a given activity is illustrated in figure 7.8.2.2.1-1.

Pre-conditions:

1. MCDData user(s) on MCDData client 1 and 2 are registered for receiving MCDData service.

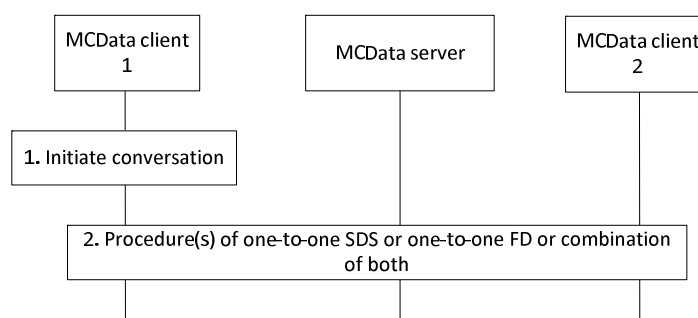


Figure 7.8.2.2.1-1: One-to-one conversation management

1. The user at MCDData 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 MCDData 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 MCDData users can view the MCDData conversation at any time after the first MCDData 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 MCDData user to associate multiple MCDData transmissions between users of a group for a given activity is illustrated in figure 7.8.2.3.1-1.

Pre-conditions:

1. MCDData user(s) on MCDData client 1, 2, and n are registered for receiving MCDData service.
2. The MCDData users 1, 2 and n are members of the same MCDData group and affiliated to the MCDData service.

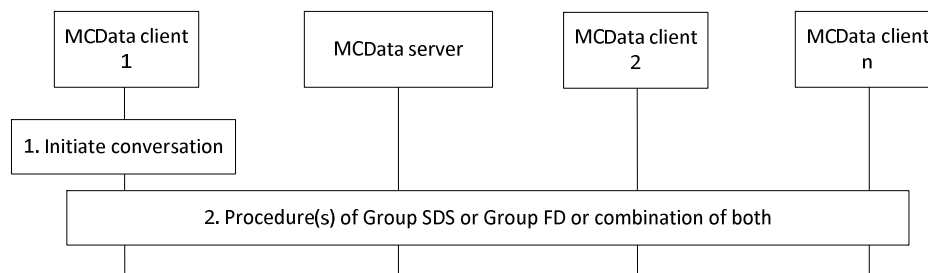


Figure 7.8.2.3.1-1: Group conversation management

1. The user at MCDData 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 MCDData 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 MCDData users can view the MCDData conversation at any time after the first MCDData 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 MCDData user to associate multiple off-network MCDData transmissions between a pair of users is illustrated in figure 7.8.3.1.1-1.

Pre-conditions:

1. MCDData client 1 and MCDData client 2 are members of the same ProSe Discovery group and are ProSe 1:1 direct communication capable.

- MCDData client 1 has discovered MCDData client 2 in proximity, associated with MCDData user B, using ProSe Discovery procedures.

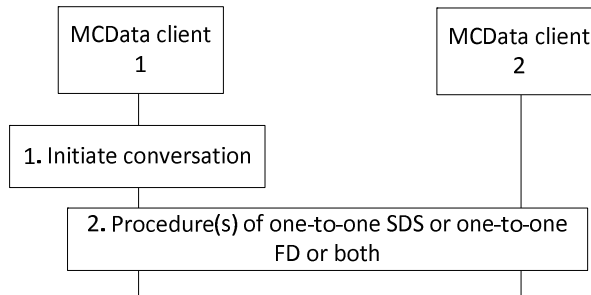


Figure 7.8.3.1.1-1: One-to-one conversation management

- The user at MCDData 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 MCDData 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 MCDData users can view the MCDData conversation at any time after the first MCDData transaction is initiated within the conversation.
- 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 MCDData user to associate multiple off-network MCDData transmissions between users of a group is illustrated in figure 7.8.3.2.1-1.

Pre-conditions:

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

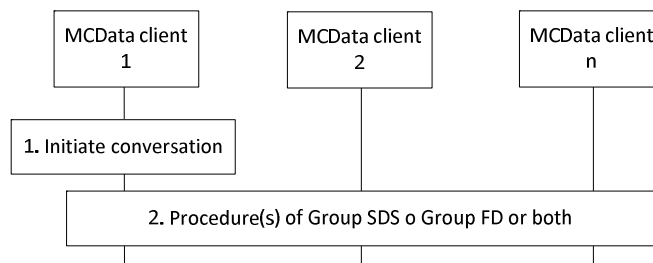


Figure 7.8.3.2.1-1: Group conversation management

- The user at MCDData 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 MCDData 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 MCDData users can view the MCDData conversation at any time after the first MCDData 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 MCDData user, shall be configured by the MCDData administrator. The configuration of status values is applicable on a per-group basis, and therefore shall be part of the MCDData group configuration data as described in Annex A.4.

The configuration mechanism shall allow the MCDData 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 MCDData 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 MCDData 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. MCDData user(s) on MCDData client 1, 2, and n are registered for receiving MCDData service.
2. The MCDData users 1, 2 and n are members of the same MCDData group and affiliated to the MCDData service.
3. The MCDData group is pre-configured with the possible values for enhanced status information.

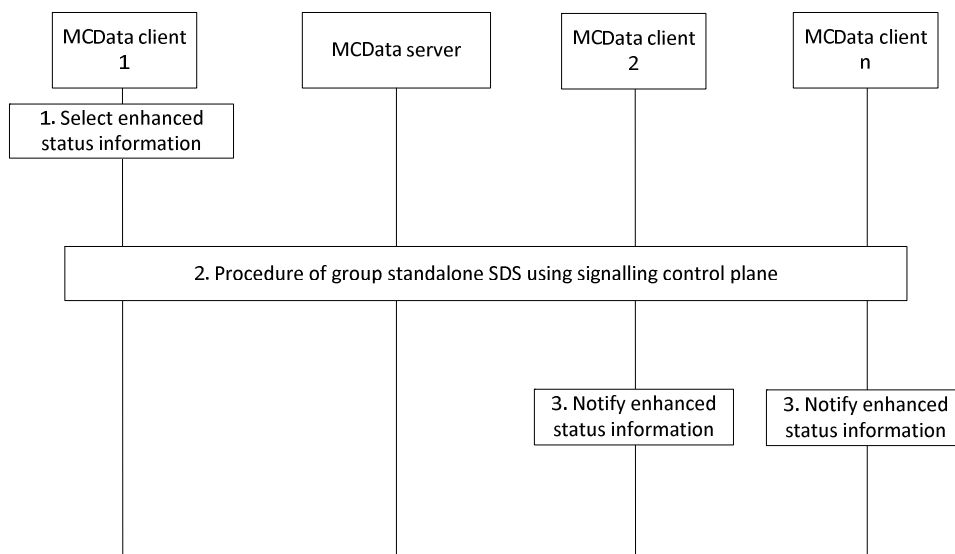


Figure 7.9.3.1.1-1: Sharing enhanced status information

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.

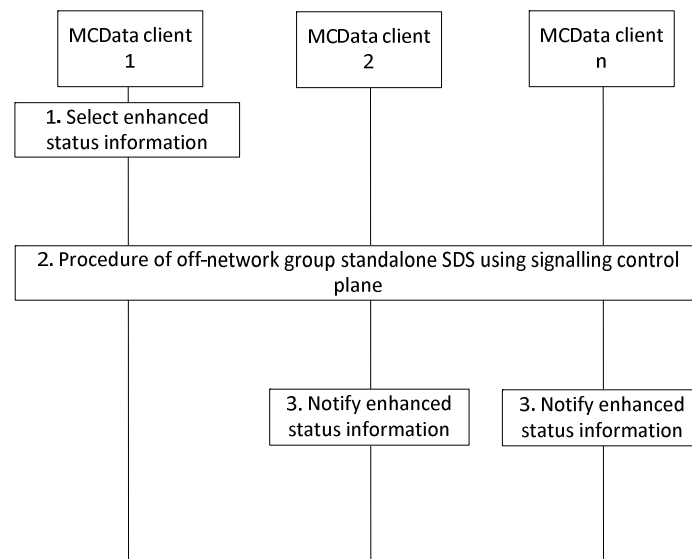


Figure 7.9.4.1.1-1: Sharing enhanced status information

1. The user at MCDData client 1 selects the MCDData 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 MCDData 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 MCDData users at MCDData client 2 and n are notified of the enhanced status information.

7.10 MCDData emergency alert (on-network and off-network)

The MCDData 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 MCDData client;
- The MC service server is the MCDData server;
- The MC service group ID is the MCDData Group ID; and
- The MC service user profile index is the MCDData user profile index.

7.10a MCDData ad hoc group emergency alert (on-network)

The MCDData service shall support the procedures and related information flows as specified in subclause 10.10.3 of 3GPP TS 23.280 [5] with the following clarifications:

- The MC service client is the MCDData client;
- The MC service server is the MCDData server;
- The MC service group ID is the MCDData Group ID; and
- The MC service user profile index is the MCDData user profile index.

7.11 User authentication and authorization for MCDData 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 MCDData service in order to realize the MCDData 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].

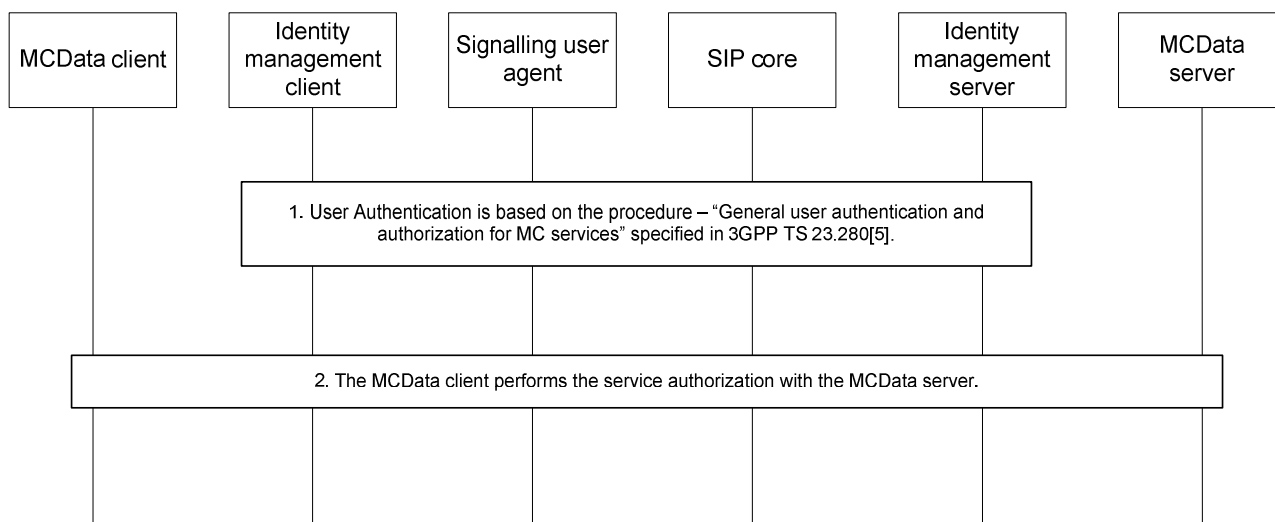


Figure 7.11-1: MCDData user authentication and registration, single domain

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. MCDData client performs the MCDData service authorization for the user. Step 2 utilizes the results of step 1.

7.12 MCDData 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 Void

7.13 Operations on MCDData message store

The MCDData message store allows an MCDData user to deposit his MCDData communication information (i.e. messages or files) securely and permanently for later retrieval. During an active MCDData communication, a message or a file with its associated metadata is deposited as an object in the MCDData message store with an object identifier; this object identifier enabling a direct access to that object. The objects in the MCDData message store are managed from both the MCDData server and the message store client.

Each MCDData user is allocated a dedicated and secured storage area (i.e. with a user account) in the MCDData message store. All MCDData communications of a MCDData 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 MCDData message store for the MCDData user using the device.

7.13.1 MCDData message store structure

MCDData message store supports a tree like architecture to securely store MCDData communications for the MCDData users. Figure 7.13.1 below illustrates the high-level structure of a MCDData message store:

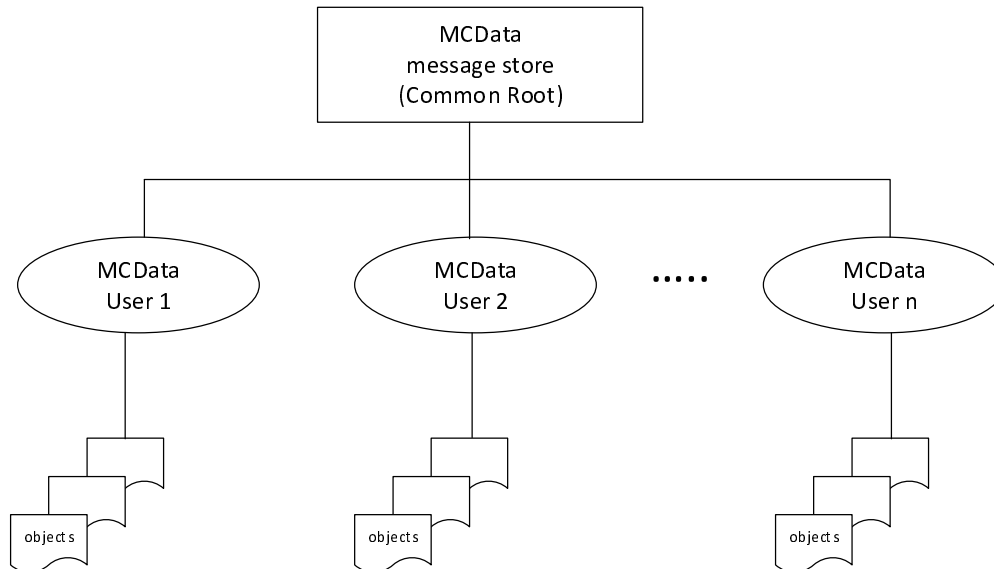


Figure 7.13.1 Message store structure

As illustrated in Figure 7.13.1 all MCDData user storage areas are accessed only through the common root. The authorized MCDData user shall only have the access to the MCDData user's storage area after the successful authentication and authorization procedures. A MCDData user shall not be able to access objects stored for other MCDData users.

The MCDData user shall manage his stored objects using message store client through the MCDData-7 reference point. The MCDData server shall use the MCDData-8 reference point to deposit MCDData communication information, during an active MCDData communication, into the designated MCDData user's storage area in the MCDData 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 MCDData 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 MCDData 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 /MCDatamessagstore /MCDatauser1/Inbox. The folder identifier /MCDatamessagstore/MCDatauser1/Squad1/20190225 points to a folder named 20190225 which is a child folder of Squad1 folder in the MCDData user1 user account.

NOTE: The details of how the objects are stored in the MCDData message store is out of scope of the present document.

7.13.2 Authentication and authorization

The MCDData message store shall authenticate the credential of MCDData server or the authorized MCDData user before authorizing access to the MCDData user's storage area. The success of authentication and authorization shall allow access to that MCDData user's storage area only.

NOTE: The authentication and authorization aspects of MCDData 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 MCDData message store

7.13.3.1 Information flows for managing MCDData message store

7.13.3.1.1 MCDData retrieve a stored object request

Table 7.13.3.1.1-1 describes the information flow for the MCDData retrieve a stored object request sent from the message store client to the MCDData message store.

Table 7.13.3.1.1-1: MCDData retrieve a stored object request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Object identifier | M | The object identifier of the object stored in the MCDData message store |

7.13.3.1.2 MCDData retrieve a stored object response

Table 7.13.3.1.2-1 describes the information flow for the MCDData retrieve a stored object response sent from the MCDData message store to the message store client.

Table 7.13.3.1.2-1: MCDData retrieve a stored object response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData search stored objects request

Table 7.13.3.1.3-1 describes the information flow for the MCDData search stored objects request sent from the message store client to the MCDData message store.

Table 7.13.3.1.3-1: MCDData search stored objects request

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData search stored objects response

Table 7.13.3.1.4-1 describes the information flow for the MCDData search stored objects response sent from the MCDData message store to the message store client.

Table 7.13.3.1.4-1: MCDData search stored objects response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData update a stored object request

Table 7.13.3.1.5-1 describes the information flow for the MCDData update a stored object request sent from the message store client to the MCDData message store.

Table 7.13.3.1.5-1: MCDData update a stored object request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Object identifier | M | The object identifier of the object stored in the MCDData message store |
| Metadata | M | The metadata that will be updated |

7.13.3.1.6 MCDData update a stored object response

Table 7.13.3.1.6-1 describes the information flow for the MCDData update a stored object response sent from the MCDData message store to the message store client.

Table 7.13.3.1.6-1: MCDData update a stored object response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user storage area in the MCDData message store |
| Result | M | The result if the update is success or failure |

7.13.3.1.7 MCDData delete a stored object request

Table 7.13.3.1.7-1 describes the information flow for the MCDData delete a stored object request sent from the message store client to the MCDData message store.

Table 7.13.3.1.7-1: MCDData delete a stored object request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Object identifier | M | The object identifier of the object stored in the MCDData message store |

7.13.3.1.8 MCDData delete a stored object response

Table 7.13.3.1.8-1 describes the information flow for the MCDData delete a stored object response sent from the MCDData message store to the message store client.

Table 7.13.3.1.8-1: MCDData delete a stored object response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user storage area in the MCDData message store |
| Result | M | The result if the delete is success or failure |

7.13.3.1.9 MCDData synchronization request

Table 7.13.3.1.9-1 describes the information flow for the MCDData synchronization request sent from the message store client to the MCDData message store.

Table 7.13.3.1.9-1: MCDData synchronization request

| Information element | Status | Description |
|--|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData synchronization response

Table 7.13.3.1.10-1 describes the information flow for the MCDData synchronization response sent from the MCDData message store to the message store client.

Table 7.13.3.1.10-1: MCDData synchronization response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData create a user account request

Table 7.13.3.1.11-1 describes the information flow for the MCDData create a user account request sent from the MCDData server to the MCDData message store.

Table 7.13.3.1.11-1: MCDData create a user account request

| Information element | Status | Description |
|---------------------|--------|----------------------------------|
| MCDData ID | M | The identity of the MCDData user |

7.13.3.1.12 MCDData create a user account response

Table 7.13.3.1.12-1 describes the information flow for the MCDData create a user account response sent from the MCDData message store to the MCDData server.

Table 7.13.3.1.12-1: MCDData create a user account response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Result | M | The result if the account creation is success or failure |

7.13.3.1.13 MCDData deposit an object request

Table 7.13.3.1.13-1 describes the information flow for the MCDData deposit an object request sent from the MCDData server to the MCDData message store.

Table 7.13.3.1.13-1: MCDData deposit an object request

| Information element | Status | Description |
|--------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Retrieve file indication | O | Flag to instruct the MCDData message store to retrieve the file to locally store in the MCDData user's account |
| Object | M | The object needs to be stored |

7.13.3.1.14 MCDData deposit an object response

Table 7.13.3.1.14-1 describes the information flow for the MCDData deposit an object response sent from the MCDData message store to the MCDData server.

Table 7.13.3.1.14-1: MCDData deposit an object response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Object Identifier | M | The object identifier that will be used to retrieve this object in the MCDData message store directly. If this information element is empty it means the object is not stored |

7.13.3.1.15 MCDData copy a stored object request

Table 7.13.3.1.15-1 describes the information flow for the MCDData copy a stored object request sent from the message store client to the MCDData message store.

Table 7.13.3.1.15-1: MCDData copy a stored object request

| Information element | Status | Description |
|-------------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Object identifier | M | The object identifier of the object stored in the MCDData message store |
| Destination folder identifier | M | Indicates where the object will be copied to |

7.13.3.1.16 MCDData copy a stored object response

Table 7.13.3.1.16-1 describes the information flow for the MCDData copy a stored object response sent from the MCDData message store to the message store client.

Table 7.13.3.1.16-1: MCDData copy a stored object response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Result | M | The result if the operation is success or failure |

7.13.3.1.17 MCDData move a stored object request

Table 7.13.3.1.17-1 describes the information flow for the MCDData move a stored object request sent from the message store client to the MCDData message store.

Table 7.13.3.1.17-1: MCDData move a stored object request

| Information element | Status | Description |
|-------------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Object identifier | M | The object identifier of the object stored in the MCDData message store |
| Destination folder identifier | M | Indicates where the object will be moved to. |

7.13.3.1.18 MCDData move a stored object response

Table 7.13.3.1.18-1 describes the information flow for the MCDData move a stored object response sent from the MCDData message store to the message store client.

Table 7.13.3.1.18-1: MCDData move a stored object response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Result | M | The result if the operation is success or failure |

7.13.3.1.19 MCDData create folder request

Table 7.13.3.1.19-1 describes the information flow for the MCDData create folder request sent from the message store client to the MCDData message store.

Table 7.13.3.1.19-1: MCDData create folder request

| Information element | Status | Description |
|--------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData create folder response

Table 7.13.3.1.20-1 describes the information flow for the MCDData create folder response sent from the MCDData message store to the message store client.

Table 7.13.3.1.20-1: MCDData create folder response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData delete folder request

Table 7.13.3.1.21-1 describes the information flow for the MCDData delete folder request sent from the message store client to the MCDData message store.

Table 7.13.3.1.21-1: MCDData delete folder request

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Folder identifier | M | The identifier of the folder to be deleted |

7.13.3.1.22 MCDData delete folder response

Table 7.13.3.1.22-1 describes the information flow for the MCDData delete folder response sent from the MCDData message store to the message store client.

Table 7.13.3.1.22-1: MCDData delete folder response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Result | M | The result if the operation is success or failure |

7.13.3.1.23 MCDData copy folder request

Table 7.13.3.1.23-1 describes the information flow for the MCDData copy folder request sent from the message store client to the MCDData message store.

Table 7.13.3.1.23-1: MCDData copy folder request

| Information element | Status | Description |
|--|--------|---|
| MCDData ID | M | The identity of the MCDData 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 name information element is provided, the new folder name will be the same as the source folder name. | | |

7.13.3.1.24 MCDData copy folder response

Table 7.13.3.1.24-1 describes the information flow for the MCDData copy folder response sent from the MCDData message store to the message store client.

Table 7.13.3.1.24-1: MCDData copy folder response

| Information element | Status | Description |
|-----------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData move folder request

Table 7.13.3.1.25-1 describes the information flow for the MCDData move folder request sent from the message store client to the MCDData message store.

Table 7.13.3.1.25-1: MCDData move folder request

| Information element | Status | Description |
|--|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData move folder response

Table 7.13.3.1.26-1 describes the information flow for the MCDData move folder response sent from the MCDData message store to the message store client.

Table 7.13.3.1.26-1: MCDData move folder response

| Information element | Status | Description |
|-----------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData list folder request

Table 7.13.3.1.27-1 describes the information flow for the MCDData list folder request sent from the message store client to the MCDData message store.

Table 7.13.3.1.27-1: MCDData list folder request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Folder identifier | O | The identifier of the folder to be listed |

7.13.3.1.28 MCDData list folder response

Table 7.13.3.1.28-1 describes the information flow for the MCDData list folder response sent from the MCDData message store to the message store client.

Table 7.13.3.1.28-1: MCDData list folder response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData user |
| Result (see NOTE) | M | The result of the list operation |
| NOTE: | | If no folder identifier information element is provided in the request, the MCDData message store returns folders from the root of the user account. If folder identifier information element is provided in the request, the MCDData message store returns the child folders from that folder identifier provided. |

7.13.3.1.29 MCDData upload objects request

Table 7.13.3.1.29-1 describes the information flow for the MCDData upload objects request sent from the message store client to the MCDData message store.

Table 7.13.3.1.29-1: MCDData upload objects request

| Information element | Status | Description |
|----------------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData message store |

7.13.3.1.30 MCDData upload objects response

Table 7.13.3.1.30-1 describes the information flow for the MCDData upload objects response sent from the MCDData message store to the message store client.

Table 7.13.3.1.30-1: MCDData upload objects response

| Information element | Status | Description |
|----------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Object upload result | M | Indicates if the objects upload is successful or not |

7.13.3.1.31 MCDData synchronization notification

Table 7.13.3.1.31-1 describes the information flow for the MCDData synchronization notification sent from the MCDData message store to the message store client.

Table 7.13.3.1.31-1: MCDData synchronization notification

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData notification server.

Table 7.13.3.1.32-1: Create notification channel request

| Information element | Status | Description |
|--|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData notification server to the message notification client.

Table 7.13.3.1.33-1: Create notification channel response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData client initiating the request |
| Validity duration | M | How long the notification channel will last (i.e. channel lifetime) as granted by the MCDData 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 MCDData notification server |
| Callback URL | M | The URL used by the Message notification client to subscribe to MCDData 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 MCDData notification server.

Table 7.13.3.1.34-1: Open notification channel request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData message store.

Table 7.13.3.1.35-1: Subscribe for notification request

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData message store to the message store client.

Table 7.13.3.1.36-1: Subscribe for notification response

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData search folder request

Table 7.13.3.1.37-1 describes the information flow for the MCDData search folder request sent from the message store client to the MCDData message store.

Table 7.13.3.1.37-1: MCDData search folder request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData search folder response

Table 7.13.3.1.38-1 describes the information flow for the MCDData search folder response sent from the MCDData message store to the message store client.

Table 7.13.3.1.38-1: MCDData search folder response

| Information element | Status | Description |
|----------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData retrieve folder content request

Table 7.13.3.1.39-1 describes the information flow for the MCDData retrieve folder content request sent from the message store client to the MCDData message store.

Table 7.13.3.1.39-1: MCDData retrieve folder content request

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Folder identifier | M | The identifier of the folder its content is requested to be returned |

7.13.3.1.40 MCDData retrieve folder content response

Table 7.13.3.1.40-1 describes the information flow for the MCDData retrieve folder content response sent from the MCDData message store to the message store client.

Table 7.13.3.1.40-1: MCDData retrieve folder content response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData retrieve file to store locally request

Table 7.13.3.1.41-1 describes the information flow for the MCDData retrieve file to store locally request sent from the message store client to the MCDData message store and from the MCDData server to the MCDData message store.

Table 7.13.3.1.41-1: MCDData retrieve file to store locally request

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Object identifier | M | The object identifier of the FD communication object stored in the MCDData message store |

7.13.3.1.42 MCDData retrieve file to store locally response

Table 7.13.3.1.42-1 describes the information flow for the MCDData retrieve file to store locally response sent from the MCDData message store to the message store client and the MCDData server.

Table 7.13.3.1.42-1: MCDData retrieve file to store locally response

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user |
| Result | M | Indicates success or failure of MCDData update FD object with file content request |
| Content reference | O | URL reference to the file content stored in the MCDData user's storage area |
| NOTE: Content reference shall be present if the content stored into the MCDData 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 MCDData notification server.

Table 7.13.3.1.43: Update notification channel request

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData 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 MCDData message store.

Table 7.13.3.1.49: Delete notification subscription request

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID | M | The identity of the MCDData 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 MCDData message store to the message store client.

Table 7.13.3.1.50: Delete notification subscription response

| Information element | Status | Description |
|---------------------|--------|--|
| MCDData ID | M | The identity of the MCDData 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 MCDData message store to the MCDData notification server and from the MCDData notification server to the MCDData 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 MCDData client of changes to the MCDData message store. (see NOTE) |
| NOTE: | MCDData 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 MCDData message store with the known object identifier that is generated by the MCDData 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 MCDData 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 MCDData message store.
2. The message store client knows the object identifier of the stored object.

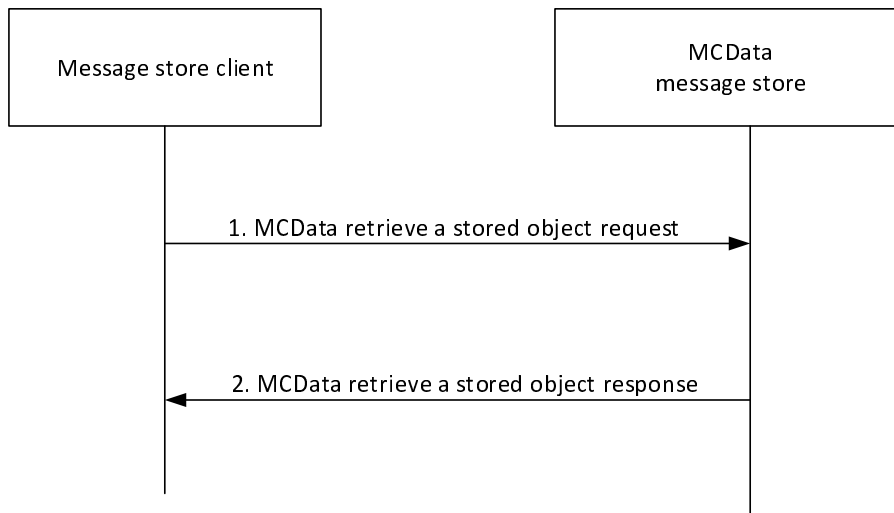


Figure 7.13.3.2.2-1: Retrieve a stored object

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.

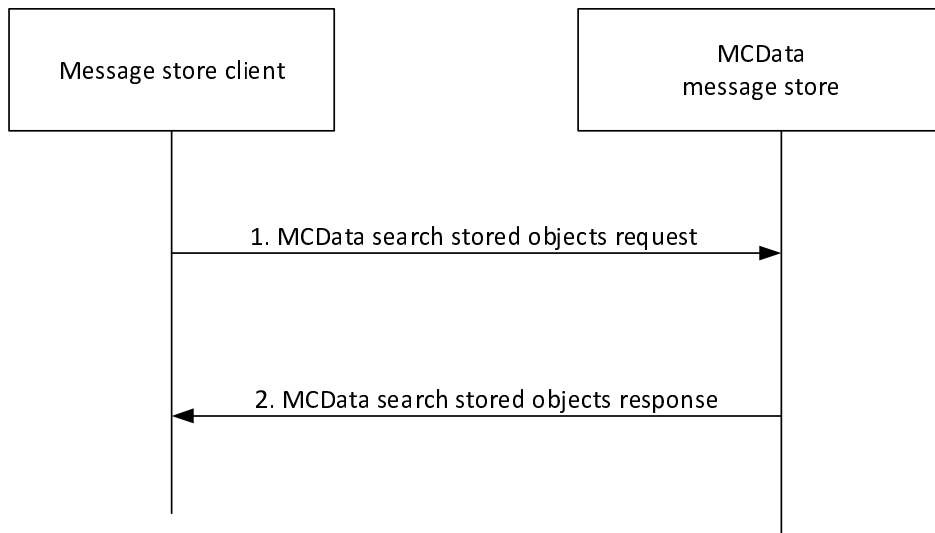


Figure 7.13.3.3.2-1: Search stored objects

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.

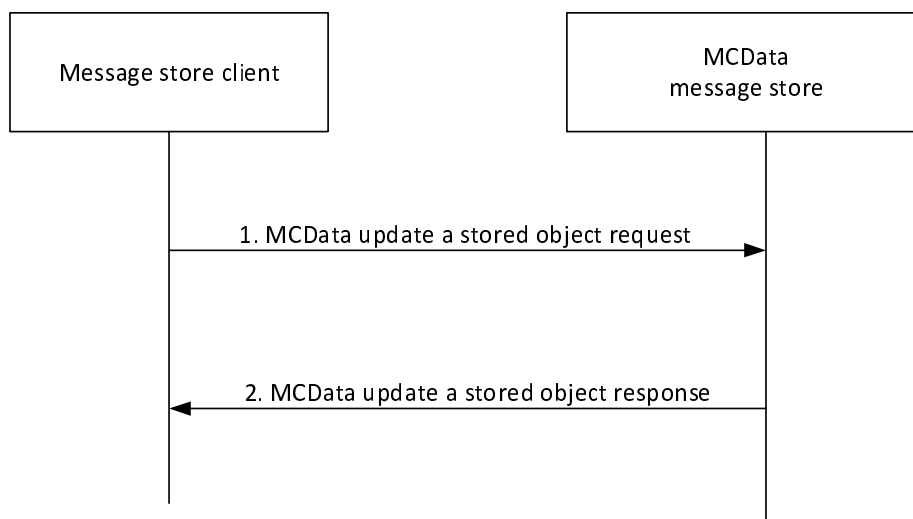


Figure 7.13.3.4.2-1: Update a stored object

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 identifier of the stored object.
3. The MCDATA user is authorized to delete the stored object.

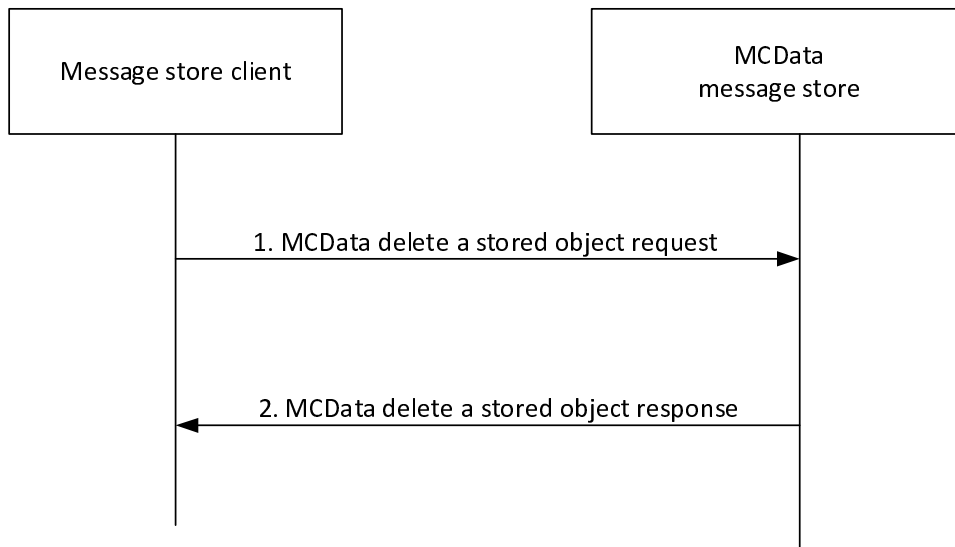


Figure 7.13.3.5.2-1: Delete a stored object

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.

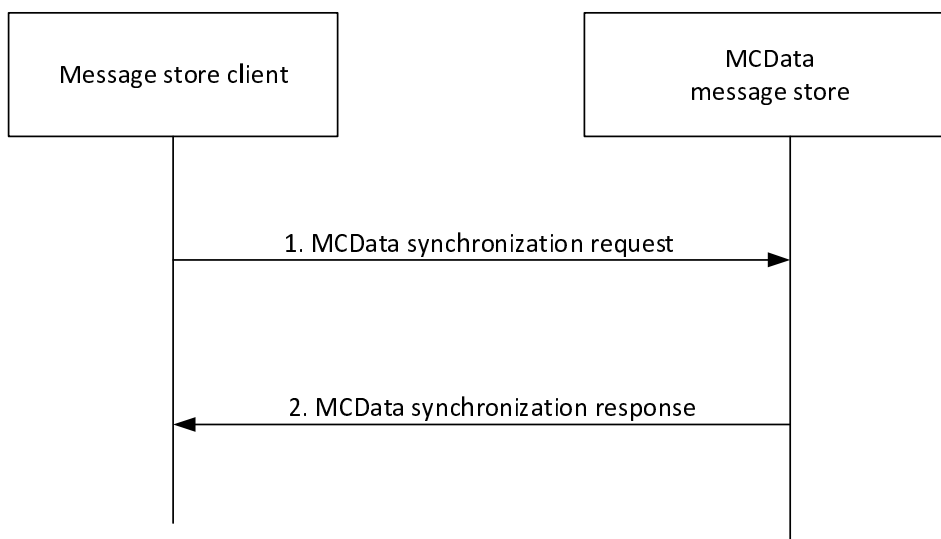


Figure 7.13.3.6.2-1: Synchronization

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.

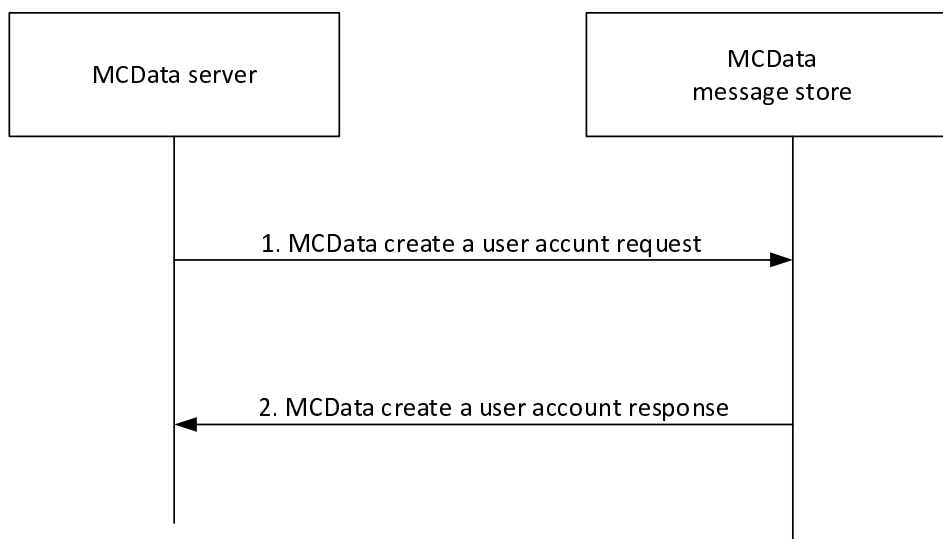


Figure 7.13.3.7.2-1: Create a user account

1. The MCDData server would like to create a MCDData user account in the MCDData message store to store the MCDData communication for that MCDData user and initiates a MCDData create a user account request toward the MCDData message store. The MCDData ID of the MCDData user is included in the request.
2. The MCDData message store creates a user account (i.e. allocate dedicated and secured storage area) for the MCDData user as specified in the request and communicates the result back to the MCDData server in the MCDData create a user account response.

7.13.3.8 Deposit an object

7.13.3.8.1 General

MCDData server needs to store the communication information (i.e. an object) for a MCDData user during an active MCDData communication. If there is a file URL in the object for file distribution in the communication, the MCDData server may instruct the MCDData message store to retrieve a copy of the file to store locally in the MCDData user's account.

7.13.3.8.2 Procedure

The procedure in figure 7.13.3.8.2-1 describes how the MCDData server deposit an object into the MCDData message store during an active MCDData communication.

Pre-conditions:

1. A successful authentication and authorization has been performed between the MCDData server and the MCDData message store.
2. The MCDData user has been allocated a secured storage area in the MCDData message store.
3. The configuration to store the MCDData communication in MCDData message store is enabled for the MCDData user.
4. MCDData user has requested to store his MCDData communication and also store the distributed file content into his MCDData message store account if the MCDData communication is for file distribution through URL.

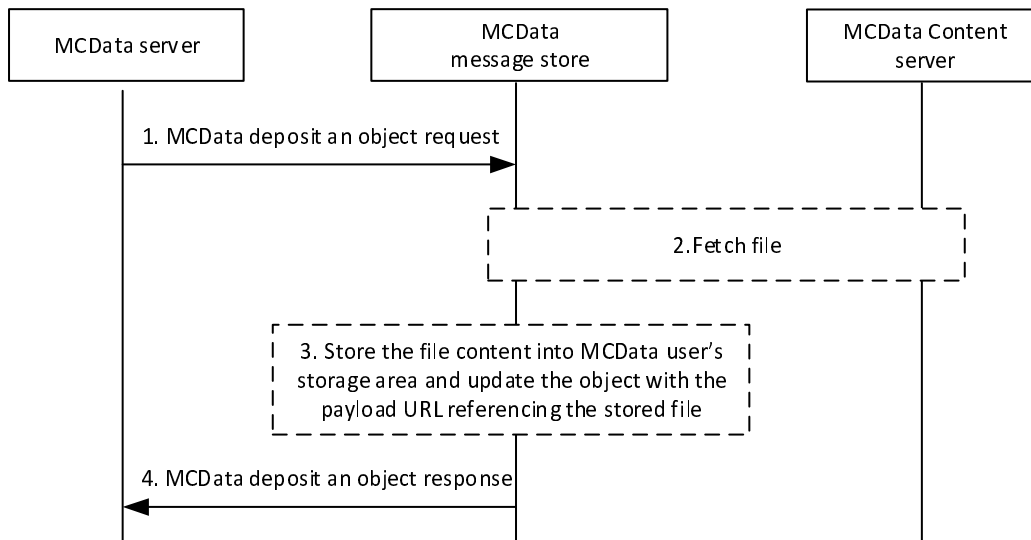


Figure 7.13.3.8.2-1: Deposit an object

1. The MCDData server would like to deposit a MCDData communication information (i.e. object) to the MCDData user's storage area in the MCDData message store and initiates a MCDData deposit an object request toward the MCDData message store. The object is constructed by the MCDData server and is included in the request. If the object is a message that carries a URL for file distribution, the MCDData server may instruct the MCDData message store to retrieve a copy of the file and store locally in the MCDData user's account by setting the retrieve file indication information element to true.
2. The MCDData message store deposits the object into the MCDData user's storage area. If the retrieve file indication is set in the MCDData deposit an object request the MCDData message store retrieves the file URL from the stored object and fetches the file content from the MCDData content server.
3. The MCDData message store stores the file content into the MCDData user's storage area and update the object with the URL referencing the file content stored in the MCDData user's storage area.
4. The MCDData message store communicates the result back to the MCDData server in the MCDData 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 MCDData message store can be copied to another location (i.e. folder) in the same MCDData 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 MCDData 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 MCDData user account.

Pre-conditions:

1. The MCDData user has an account in the MCDData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCDData message store.
3. The message store client knows the object identifier of the stored object and the destination folder identifier.

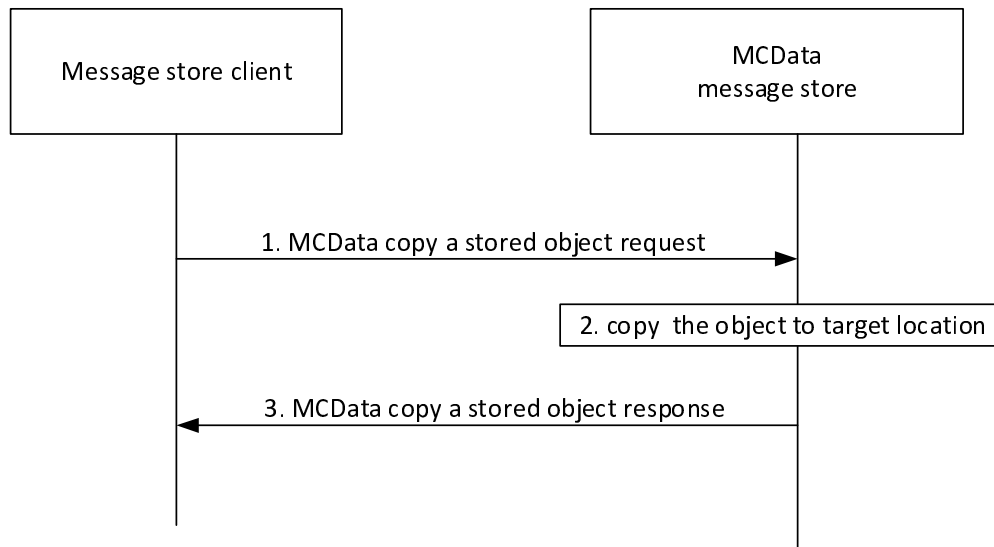


Figure 7.13.3.9.2-1: Copy a stored object

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 unique 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.

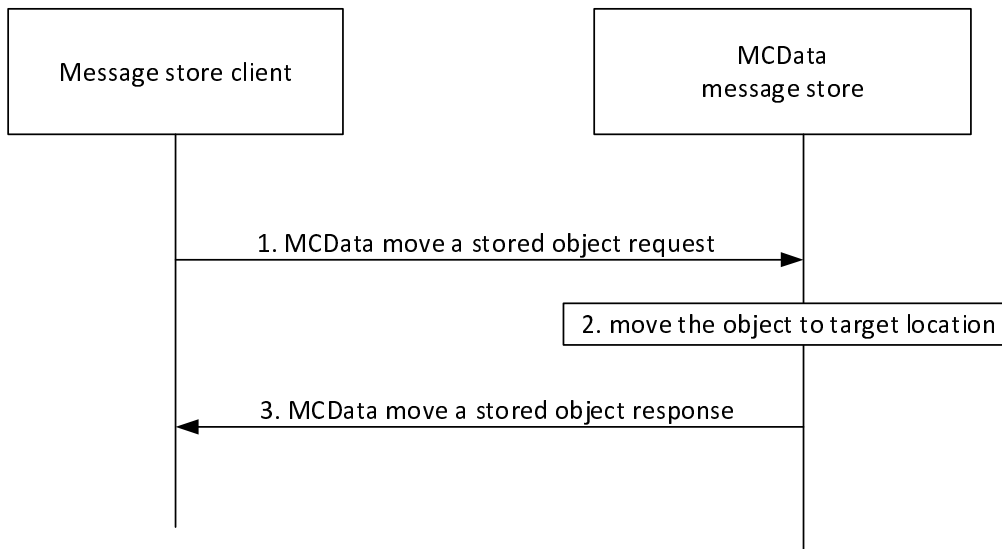


Figure 7.13.3.10.2-1: Move a stored object

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 unique 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 in 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.

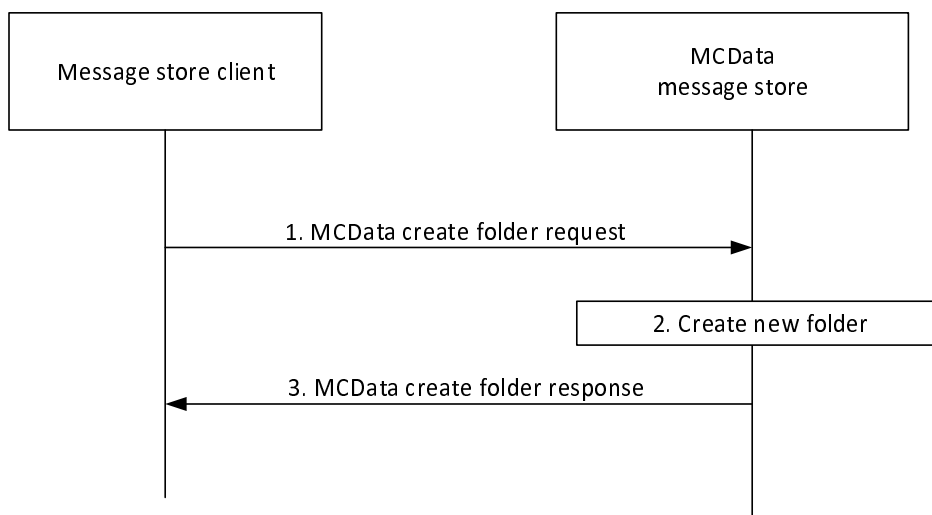


Figure 7.13.3.11.2-1: Create a new user folder

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.

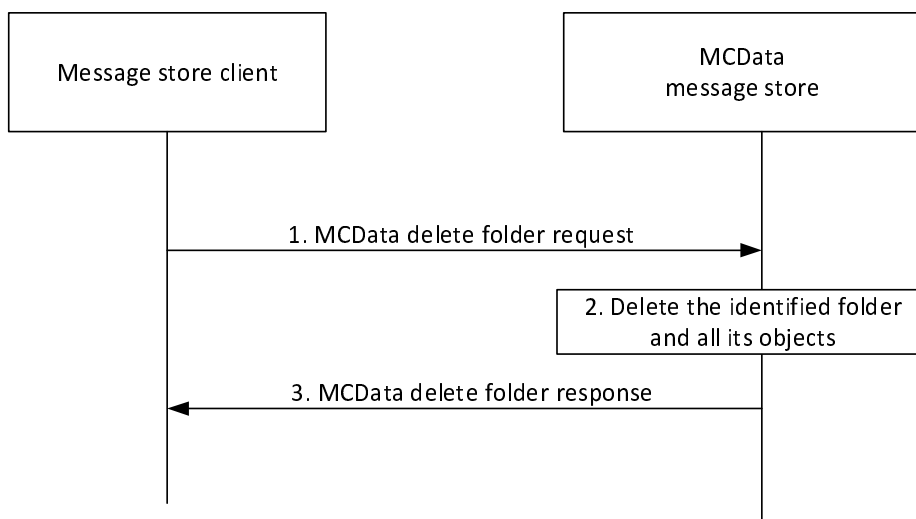


Figure 7.13.3.12.2-1: Delete a user folder

1. The MCDData user would like to delete an existing folder in his user account in the MCDData message store, the message store client initiates a MCDData delete folder request toward the MCDData message store. The folder identifier of the folder to be deleted is included in the request.
2. The MCDData 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 MCDData message store returns the result in the MCDData 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 MCDData 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 MCDData user copies an existing folder in the MCDData message store.

Pre-conditions:

1. The MCDData user has an account in the MCDData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCDData message store.

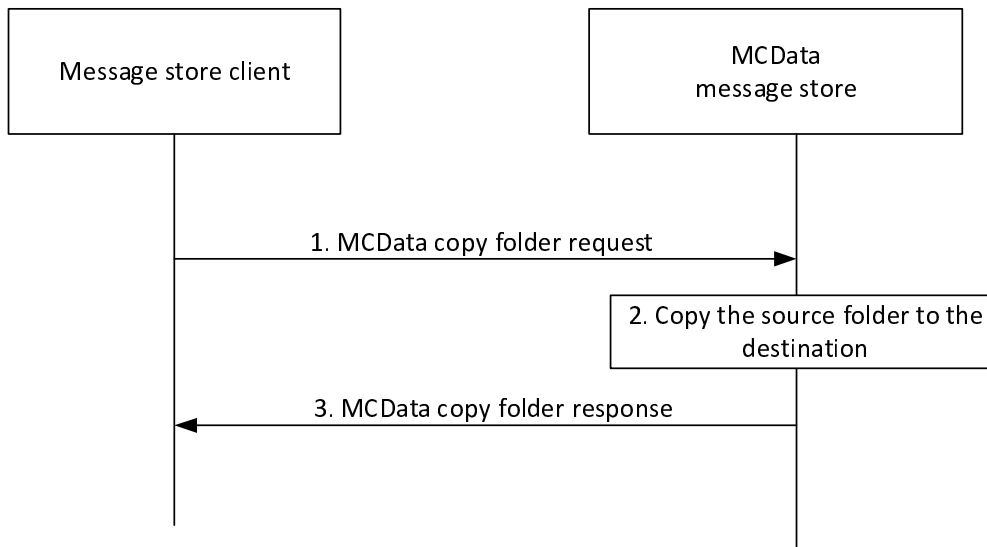


Figure 7.13.3.13.2-1: Copy a user folder

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.

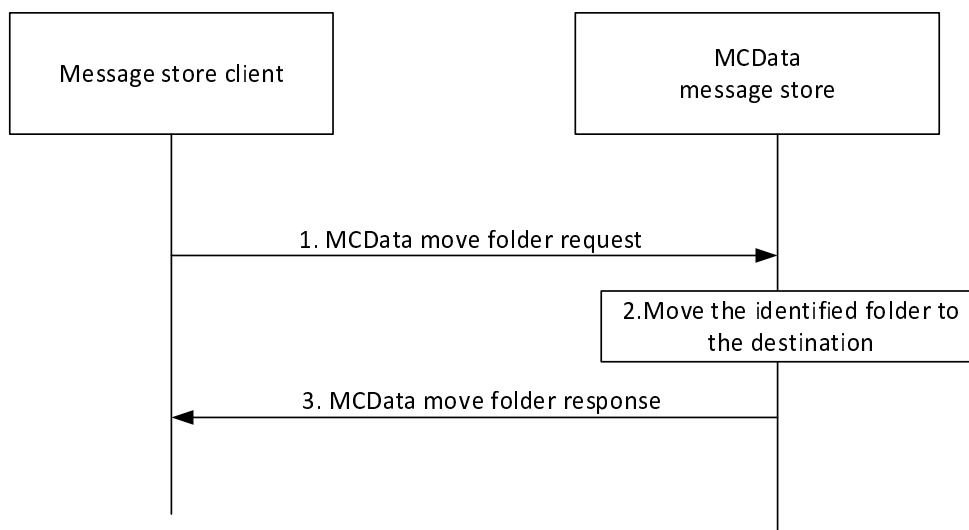


Figure 7.13.3.14.2-1: Move a user folder

1. The MCDData user would like to move an existing folder in his user account in the MCDData message store to a new location, the message store client initiates a MCDData move folder request toward the MCDData message store. The folder identifiers of the source and destination folders and the new folder name are included in the request.
2. The MCDData 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 MCDData message store returns the result in the MCDData 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 MCDData 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 MCDData 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 MCDData user lists an existing folder's hierarchy structure in the MCDData message store.

Pre-conditions:

1. The MCDData user has an account in the MCDData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCDData message store.

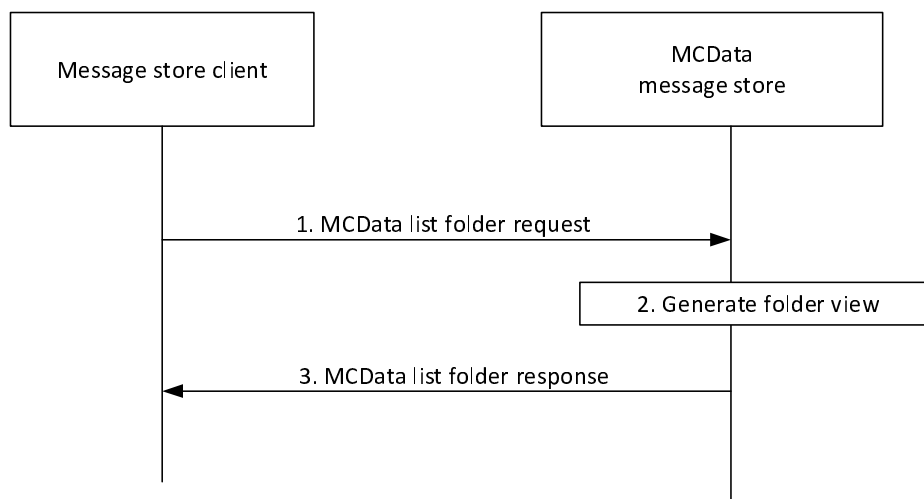


Figure 7.13.3.15.2-1: Folder list operation

1. The MCDATA user would like to view the folder structure 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.

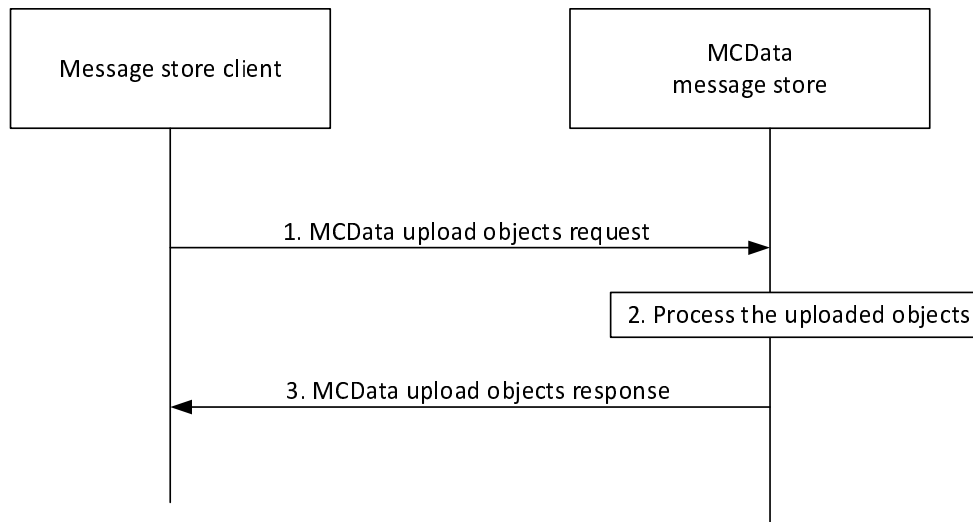


Figure 7.13.3.16.2-1: Upload objects

1. The message store client would like to upload new objects 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.

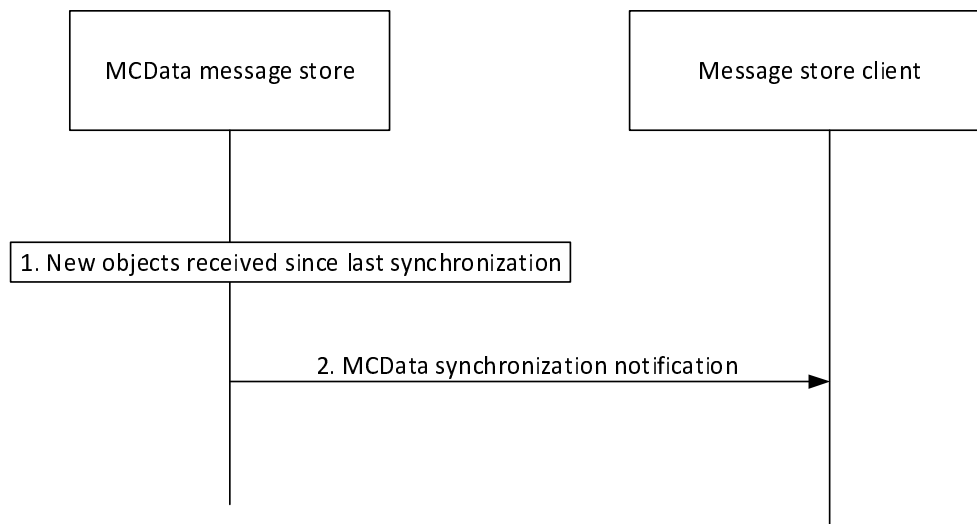


Figure 7.13.3.17.2-1: Notify client to synchronize using in-band connection

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

NOTE: How MCDData 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 MCDData message store sends the MCDData synchronization notification to the message store client.

7.13.3.17.3 Procedure using MCDData notification server

The procedure in figure 7.13.3.17.3-1 describes how the MCDData message store notifies the message notification client, using a MCDData notification server, that there are new objects in the MCDData 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 MCDData notification server and the MCDData 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 MCDData notification server.

Pre-conditions:

1. The MCDData user has an account with the MCDData message store.
2. A successful authentication and authorization have been performed between the message store client and the MCDData message store.
3. The Message store client doesn't have an ongoing session with the MCDData message store.
4. The trust relationship between the MCDData notification server and the MCDData message store has been established.
5. The MCDData notification server has a trust relationship and connection with the PUSH Enabler server.

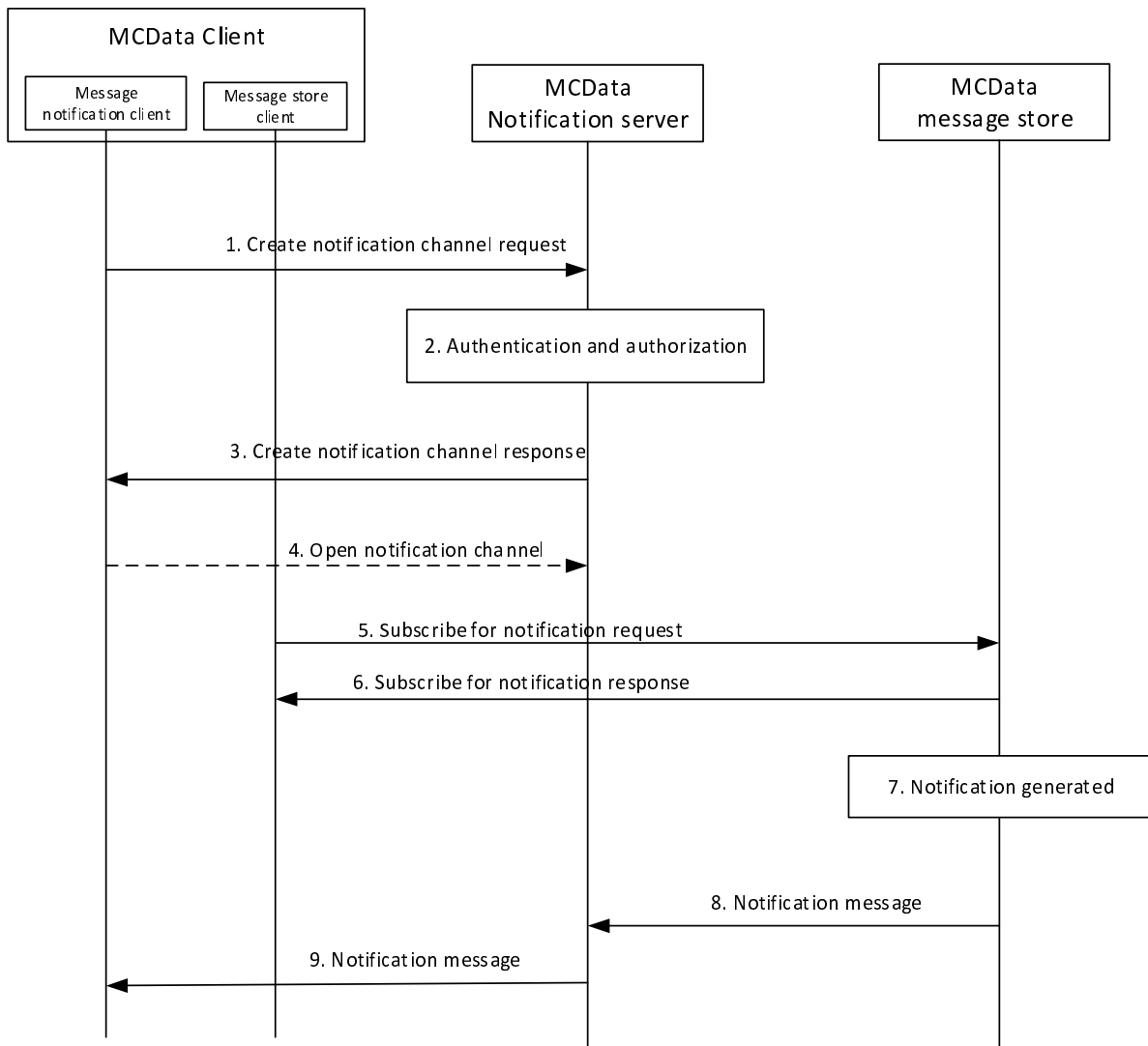


Figure 7.13.3.17.3-1: Notify client to synchronize through MCDData notification server

1. The Message notification client wants to create notification channels (i.e. endpoint URLs) to be used by the MCDData message store to send notification messages and sends a Create notification channel request to the MCDData 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 MCDData notification server authenticates the Message notification client and authorizes its request.
3. The MCDData notification server sends the Message notification client the Create notification channel response with the endpoint URLs that will be used by the MCDData message store to send the notification messages and the Message notification client to receive the notification messages. The MCDData 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 MCDData notification server to start receiving the notification message. For certain PUSH method notification type (such as WebSockets) the message notification client requests the MCDData 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 MCDData message store asking to be notified if there are changes to its message store account. The callback URL returned from the MCDData notification server in step 3 is included in the request for the MCDData message store to use to send notification messages.
6. The MCDData message store sends the Subscribe for notification response to the message store client to acknowledge the request.

7. The MCDData user's message store account has changed and the MCDData message store generates a notification message.
8. Using the callback URL, the MCDData message store sends the notification message to the MCDData notification server.
9. If the delivery method is PULL, the MCDData notification server sends the notification message to the message notification client over the opened notification channel. If the delivery method is PUSH, the MCDData 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 MCDData notification server.
2. The message store client has a successful notification subscription with the MCDData message store.
3. The validity duration of the notification channel is about to expire.

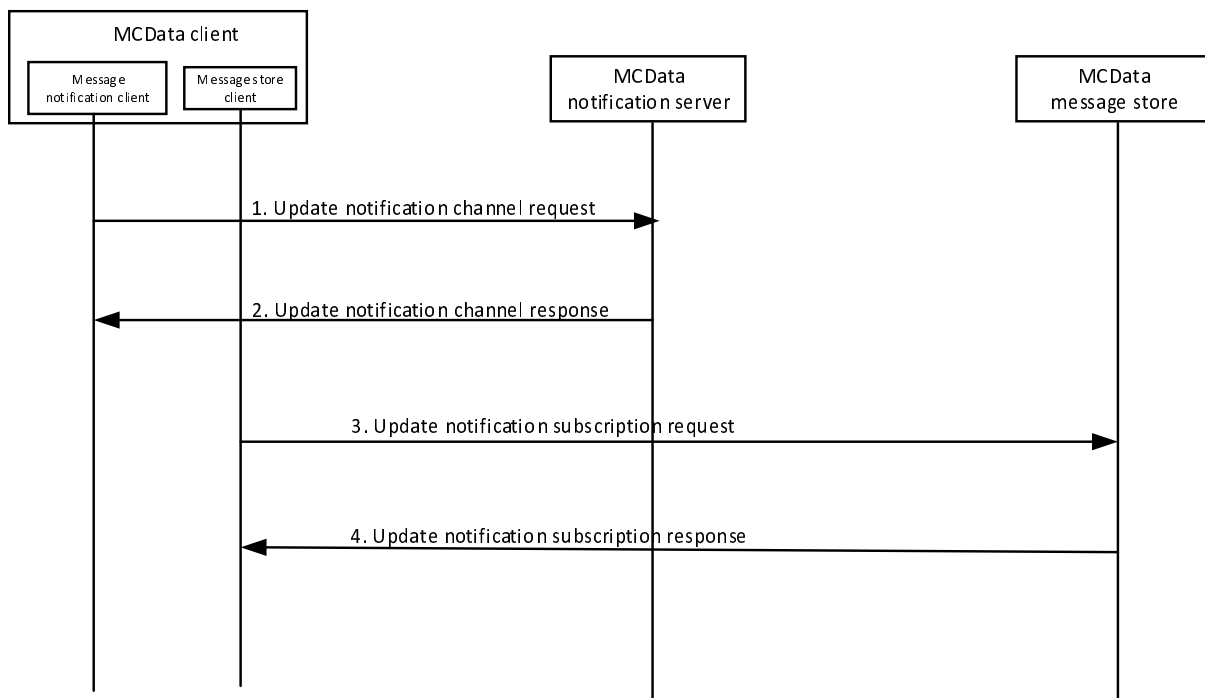


Figure 7.13.3.17.3-2: Update a notification channel

1. The message notification client sends the Update notification channel request, including the desired new validity duration, to the MCDData notification server.
2. The MCDData 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 MCDData message store with the new validity duration received from the MCDData notification server in step 2.
4. The MCDData 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 MCDData notification server.
2. The message store client has a successful notification subscription with the MCDData message store.
3. The MCDData user no longer wants to receive notifications from the MCDData message store.

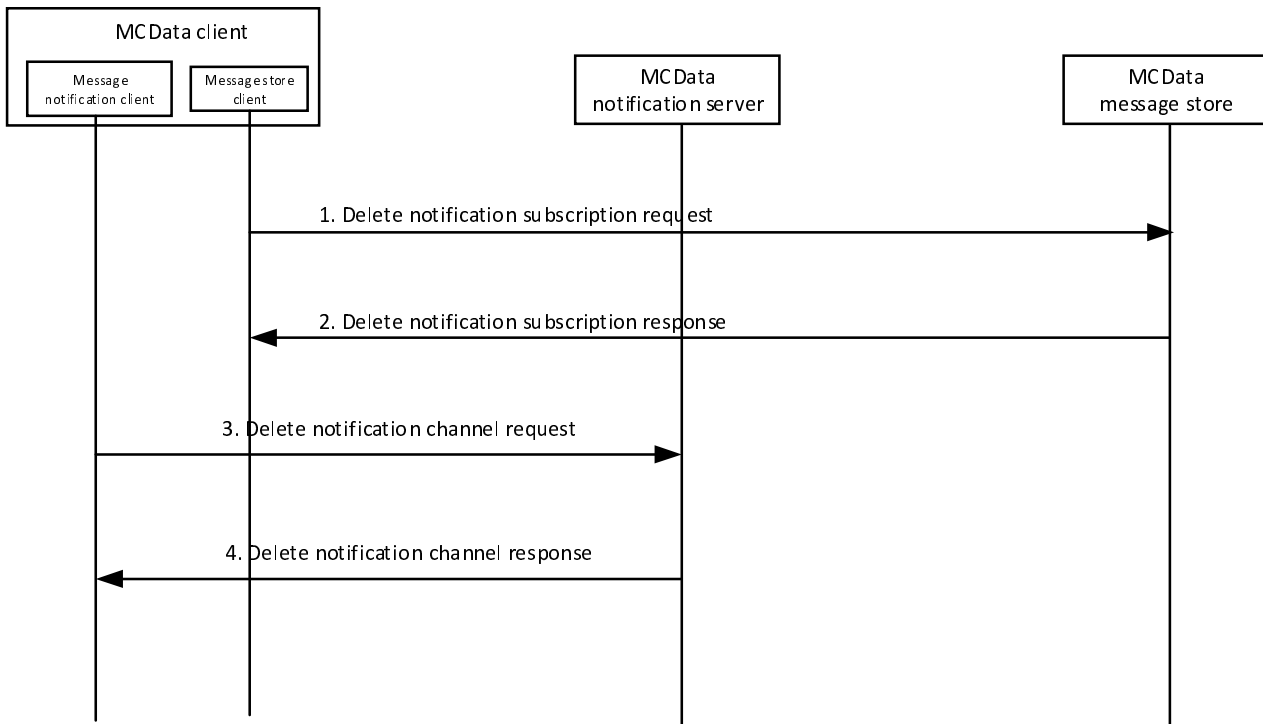


Figure 7.13.3.17.3-3: Delete a notification channel

1. The message store client decides to stop receiving notifications from the MCDData message store and sends the Delete notification subscription request to the MCDData message store.
2. The MCDData 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 MCDData notification server.
4. The MCDData 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 MCDData message store.

Pre-conditions:

1. A successful authentication and authorization have been performed between the message store client and the MCDData message store.

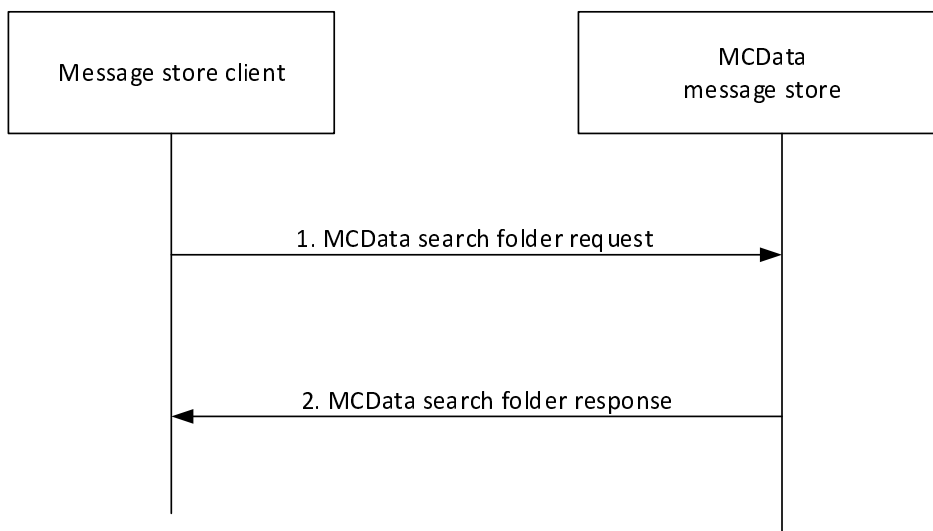


Figure 7.13.3.18.2-1: Search folder

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 MCDData search folder request toward the MCDData message store. The search criteria are included in the request.
2. The MCDData message store identifies all folders that match the search criteria and returns them in the MCDData search folder response.

7.13.3.19 Retrieve folder content

7.13.3.19.1 General

An MCDData 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 MCDData 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 MCDData message store.

Pre-conditions:

1. A successful authentication and authorization have been performed between the message store client and the MCDData message store.

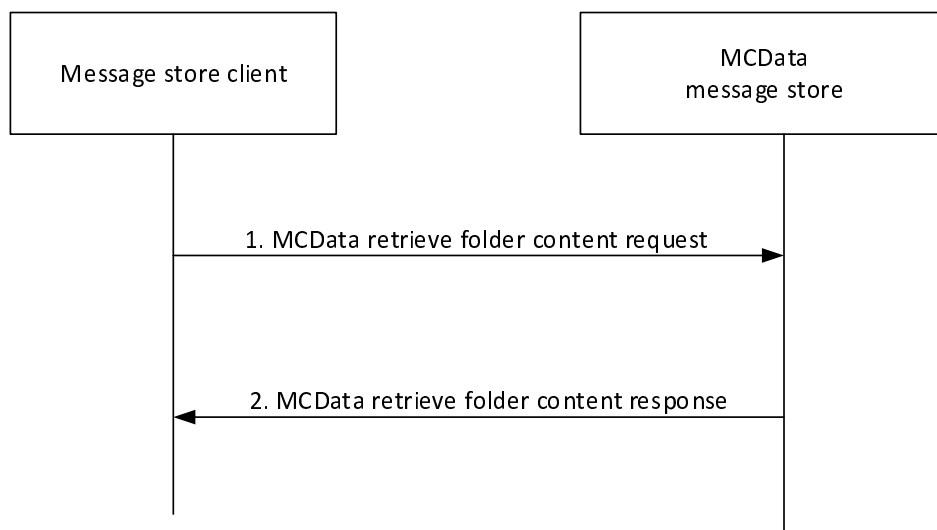


Figure 7.13.3.19.2-1: retrieve folder content

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.

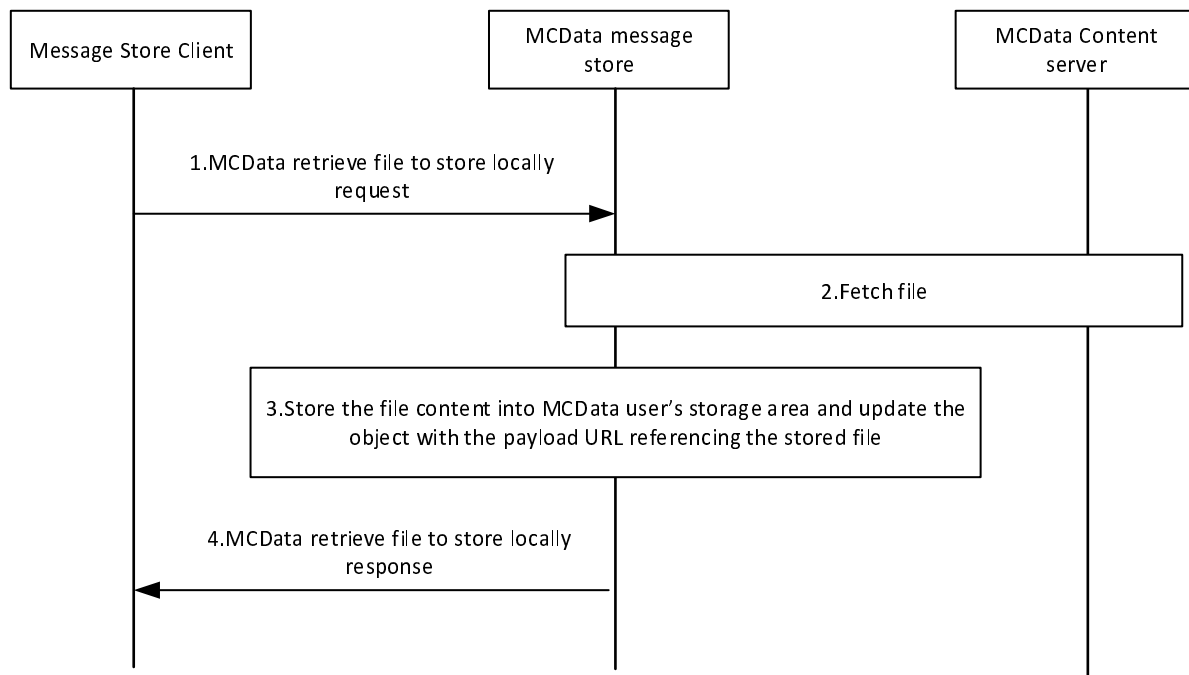


Figure 7.13.3.20.3-1: store file contents distributed using HTTP – receiver side

1. The Message store client initiates MCDData retrieve file to store locally request towards the MCDData message store. The object identifier corresponding to the stored MCDData FD communication is included in the request.
2. The MCDData message store retrieves the file URL from the stored object and fetches the file content from the MCDData content server.
3. The MCDData message store stores the file content into the MCDData user's storage area and update the object with the URL referencing the file content stored in the MCDData user's storage area.
4. The MCDData message store provides the MCDData retrieve file to store locally response to the message store client. This response includes the URL of the file being stored in the MCDData user's storage area.

7.13.4 Generic outgoing SDS procedure with MCDData message store

7.13.4.1 General

When a MCDData user is supported with MCDData message store all his outgoing communications shall be stored in his account in the MCDData message store when he has requested. This generic SDS procedure applies to all procedures in subclause 7.4.2 when the MCDData user requests to store the MCDData communication.

7.13.4.2 Procedure

The procedure in figure 7.13.4.2-1 describes the generic SDS service where MCDData message store is supported.

Pre-conditions:

1. MCDData user has an account created with MCDData message store.
2. The configuration to store the MCDData communication in MCDData message store is enabled for the MCDData user.
3. MCDData user has requested to store his MCDData communication.

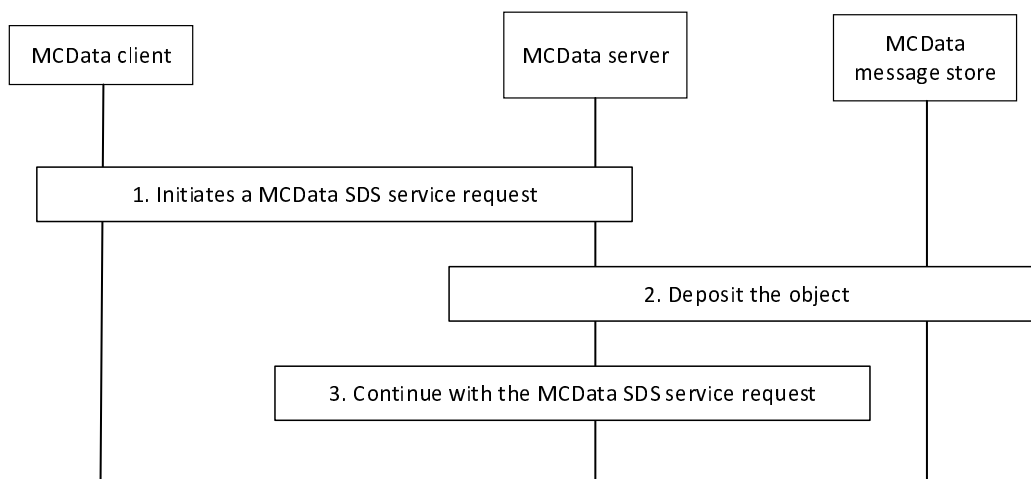


Figure 7.13.4.2-1: Generic outgoing SDS procedure with MCDData message store

1. MCDData client initiates an MCDData SDS service request; this service request can be a private or group communication.
2. MCDData server checks and authorizes the service request and if authorized stores the communication as an object to the MCDData user account in the MCDData message store.
3. MCDData server continues the service request toward the targeted recipient(s) as described in subclause 7.4.2.

7.13.5 Generic incoming SDS procedure with MCDData message store

7.13.5.1 General

When a MCDData user is supported with MCDData message store all his incoming communications shall be stored in his account in the MCDData message store when he has requested. This generic SDS procedure applies to all procedures in subclause 7.4.2 when the MCDData user requests to store the MCDData communication.

7.13.5.2 Procedure

The procedure in figure 7.13.5.2-1 describes the generic SDS service where MCDData message store is supported.

Pre-conditions:

1. MCDData user has an account created with MCDData message store.
3. The configuration to store the MCDData communication in MCDData message store is enabled for the MCDData user.
3. MCDData user has requested to store his MCDData communication.

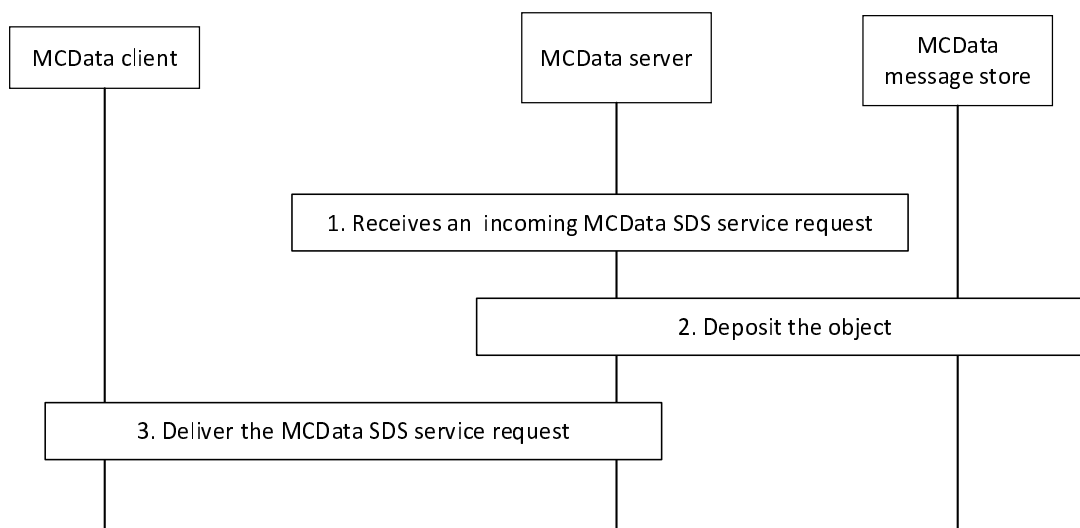


Figure 7.13.5.2-1 Generic incoming SDS procedure with MCDData message store

1. The MCDData server receives an incoming MCDData SDS service request for the MCDData user. This service request can be a response to an earlier service request sent by the MCDData user or a new service request coming from any sender.
2. MCDData server checks and authorizes the service request and if authorized stores the communication as an object to the MCDData user account in the MCDData message store.
3. MCDData server delivers the service request to MCDData user as described in subclause 7.4.2.

7.13.6 Interconnection and migration with MCDData message store

7.13.6.1 Interconnection

There is no interconnection of MCDData message stores, as there are no defined reference points providing connection between message stores in different MCDData systems.

7.13.6.2 Migration

A migrated MCDData user may be provided with access to a local message store by the partner MCDData system of the migrated MCDData user. The MCDData user is identified by the MCDData ID used in the partner MCDData system by that migrated MCDData user in order to access the message store. There is no connection between this message store in the partner MCDData system of the migrated MCDData user and any message store that the MCDData user has access to in the primary MCDData system of that MCDData user, and therefore access to a message store in the partner MCDData system does not provide a means of accessing stored content in the primary MCDData system of the migrated MCDData user.

A migrated MCDData user may be provided with a means of access to the message store in the primary MCDData system of that MCDData user, e.g. by providing the MCDData user with a suitable APN and appropriate IP routing, or by use of the MCDData 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 MCDData client as the link between data host and MC system enables the exchange of IP Data. For addressing the corresponding MCDData users either MCDData ID or the functional alias can be used independently of each other. The MCDData server provides the mechanisms to establish the association between MCDData 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 MCDData IPcon point-to-point request

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

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

| Information element | Status | Description |
|---|---------------|---|
| MCDData ID | M | The MCDData identity of the originator MCDData user; |
| Functional alias | O | The associated functional alias of the originator MCDData user; |
| MCDData ID | O (NOTE 2) | The MCDData identity of the target MCDData client IP connectivity is requested. |
| Functional alias | O (NOTE 2) | The functional alias of the target MCDData client. |
| SDP offer | M | Offered media parameters describing the requested characteristics of the IP tunnel between the MCDData UEs. |
| Requested Priority (NOTE 3) | O | Application priority level requested for this communication. |
| Location Information | O (NOTE 1) | Actual location information of the originating MCDData 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 MCDData user that may be different to the latest available location information in the MC system. | | |
| NOTE 2: At least one identity shall be present. If both are present the MCDData ID shall be used to route the request and the functional alias is just for information. | | |
| NOTE 3: The predefined priority of the MC service user is applied by the MCDData server if the requested priority is not present or not accepted by the MCDData server. | | |

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

| Information element | Status | Description |
|---|---------------|---|
| MCDData ID | M | The MCDData identity of the originator MCDData user; |
| MCDData ID | M | The MCDData identity of the target MCDData client IP connectivity is requested. |
| SDP offer | M | Offered media parameters describing the requested characteristics of the IP tunnel between the MCDData UEs. |
| Location Information | O (NOTE 1) | Actual location information of the originating MCDData 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 MCDData user. | | |

7.14.2.1.2 MCDData IPcon point-to-point response

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

Table 7.14.2.1.2-1: MCDData IPcon point-to-point response

| Information element | Status | Description |
|------------------------|--------|---|
| MCDData ID | M | The MCDData identity of the targeted MCDData user. |
| MCDData ID | M | The MCDData identity of the requesting MCDData user. |
| SDP answer | O | Media parameters selected. This shall be present if the IP connectivity establishment result is successful. |
| Time Limit | O | Negotiated time (1 min – infinite) |
| IP connectivity status | M | IP connectivity establishment result |

7.14.2.1.3 MCDData remote IPcon point-to-point request

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

Table 7.14.2.1.3-1: MCDData remote IPcon point-to-point request

| Information element | Status | Description |
|---|--------|--|
| MCDData ID remote | M | The MCDData identity of the remote MCDData client that requests another MCDData user to establish an IP connectivity point-to-point session. |
| Functional alias remote | O | The associated functional alias of the remote MCDData user. |
| MCDData ID asked | M | The MCDData identity of the MCDData client that is required to establish an IP connectivity point-to-point session. |
| Functional alias asked | O | The functional alias associated with the MCDData identity of the MCDData client that is required to establish an IP connectivity point-to-point session. |
| MCDData ID targeted (NOTE 1) | O | The MCDData identity of the MCDData 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 MCDData identity of the MCDData 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: At least one identity shall be present. If both are present the MCDData ID shall be used to route the request and the functional alias is just for information. | | |
| NOTE 2: The predefined priority of the MC service user is applied by the MCDData server if the requested priority is not present or not accepted by the MCDData server. | | |

7.14.2.1.4 MCDData remote IPcon point-to-point response

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

Table 7.14.2.1.4-1: MCDData remote IPcon point-to-point response

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

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

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

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

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

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

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

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

| Information element | Status | Description |
|---------------------|--------|---|
| MCDData ID asked | M | The MCDData identity of the asked MCDData client in the request message. |
| MCDData ID targeted | M | The MCDData identity of the targeted MCDData 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 MCDData remote IPcon point-to-point application priority change request

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

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

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ID remote | M | The MCDData identity of the remote MCDData 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 MCDData user; |
| MCDData ID | M | The first MCDData identity of the MCDData client that is involved in the IP connectivity point-to-point session. |
| MCDData ID | M | The second MCDData identity of the MCDData 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 MCDData clients. |

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

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

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

| Information element | Status | Description |
|----------------------------------|--------|---|
| MCDData ID | M | The MCDData identity of the first MCDData client involved in the IP connectivity point-to-point session. |
| MCDData ID | M | The MCDData identity of the second MCDData 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 MCDData transport service

7.14.2.2.1 General

IP connectivity service capabilities enables MCDData unaware data hosts to use usual MCDData 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 MCDData user may be addressed using the functional alias that can be shared by multiple MCDData users.

In order not to violate the point-to-point principle when a functional alias is shared, only two MCDData user can participate to a point-to-point IP connectivity session. If the MCDData server detects that the functional alias used as the target of the MCDData FD request is simultaneously active for multiple MCDData users, then the MCDData server can proceed by selecting an appropriate MCDData ID based on some selection criteria. The selection of an appropriate MCDData ID is left to implementation. These selection criteria can include rejection of the IP connectivity request, if no suitable MCDData 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 MCDData client is initiating a point-to-point IP connectivity with another IP connectivity capable MCDData 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.
- MCDData clients are linked with individual data hosts.
- MCDData clients belong to the same MCDData system.
- The data hosts linked with the MCDData clients already have an IP address allocated.
- MCDData clients have IP connectivity capabilities.
- The linked data hosts are authorized to use the MCDData clients to establish an IP connectivity.

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

- The MCDData server has subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.
- MCDData client 1 understands the correspondence between the IP addresses of target data hosts and MCDData client 2. How this relationship is determined is out of scope of the present document.
- Optionally, the MCDData clients may have activated a functional alias to be used.

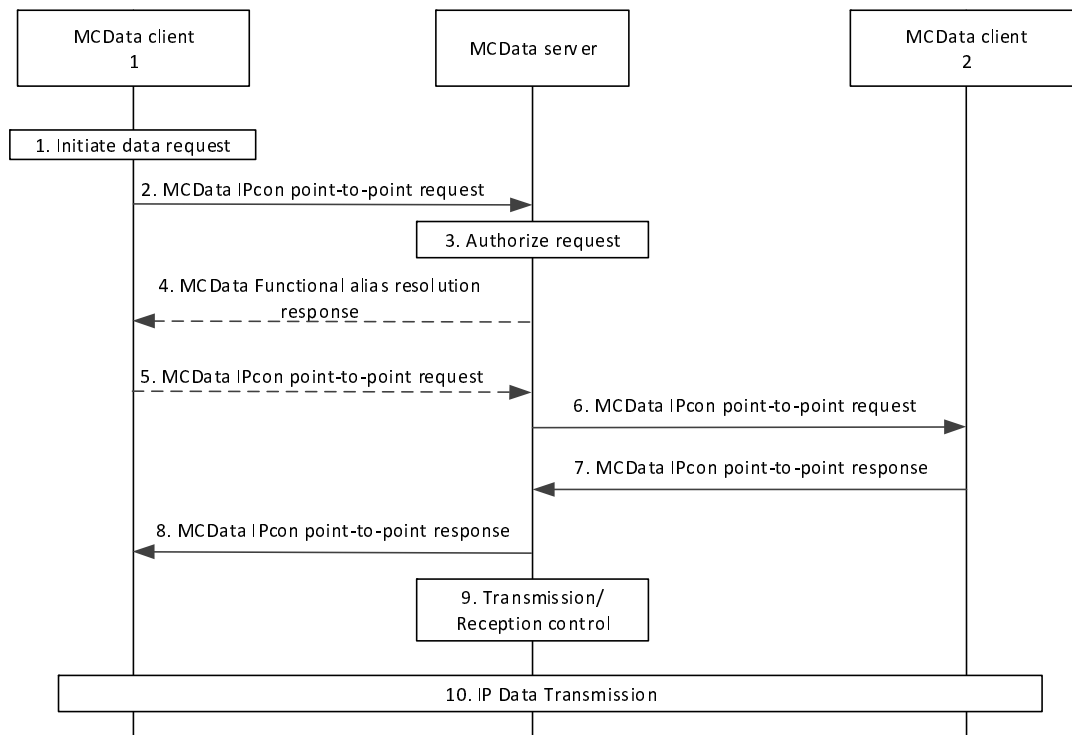


Figure 7.14.2.2.2-1: Establishment of a point-to-point IP connectivity

1. MCDData client 1 has IP Data to send to MCDData client 2 and initiates an IP connectivity point-to-point request.
2. MCDData client 1 sends a MCDData IPcon point-to-point request towards the MCDData server. The MCDData IPcon point-to-point request contains either the MCDData ID of MCDData client 2 or its associated functional alias. MCDData user at MCDData client 1 may include its associated functional alias
3. MCDData server checks whether MCDData user at MCDData client 1 is authorized to send an MCDData IPcon point-to-point request and checks if MCDData client 2 is authorised to receive the IP connectivity service. If a functional alias is used to address the target MCDData user, the MCDData server resolves the functional alias to the corresponding MCDData ID(s) for which the functional alias is active and proceed with step 4 otherwise proceed with step 6.
4. The MCDData server responds back to MCDData client 1 with a functional alias resolution response message that contains the resolved MCDData ID.
5. If the MCDData server replies with a MCDData functional alias resolution response message, the MCDData client 1 assumes the MCDData IPcon point-to-point request in step 2 is rejected and sends a new MCDData IPcon point-to-point request towards the resolved MCDData ID.
6. MCDData server initiates the MCDData IPcon point-to-point request towards the determined MCDData client 2.

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

7. MCDData client 2 sends a MCDData IPcon point-to-point response to the MCDData server that contains the information if the request is accepted or the reason of rejection. If accepted, the MCDData client 2 may include the data transmission time limit.
8. MCDData server forwards the MCDData IPcon point-to-point response of MCDData client 2 to MCDData client 1.
9. The MCDData server applies transmission and reception control and the necessary policy to ensure that appropriate data is transmitted between the MCDData clients.
10. MCDData client 1 and MCDData Client 2 have successfully established media plane for data communication and MCDData client 1 and MCDData client 2 exchange IP Data.

7.14.2.3 Remote initiated point-to-point IP connectivity

7.14.2.3.1 General

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

7.14.2.3.2 Procedure

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

Pre-conditions:

- The MCDData clients are linked with individual data hosts.
- MCDData clients belong to the same MCDData system.
- The data hosts linked with the MCDData clients already have an IP address allocated.
- MCDData clients have IP connectivity capabilities.
- The linked data hosts are authorized to use the MCDData clients to establish an IP connectivity.

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

- The MCDData server has subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.
- MCDData clients understands the correspondence between the IP addresses of target data hosts and MCDData client 3. How this relationship is determined is out of scope of the present document.
- Optionally, the MCDData clients may have activated a functional alias to be used.
- MCDData client 1 is authorized to establish remote initiated point-to-point IP connectivity sessions.

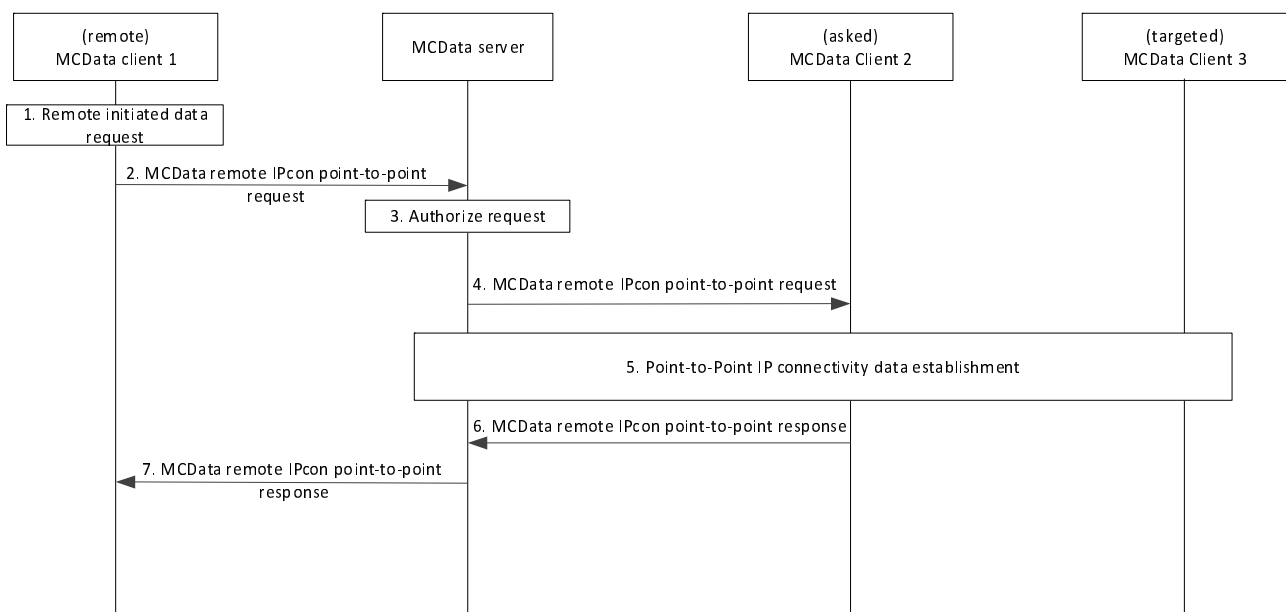


Figure 7.14.2.3.2-1: Establishment of a remote point-to-point IP connectivity

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

2. The MCDData client 1 sends an MCDData remote IPcon point-to-point request towards the MCDData server. The MCDData IPcon point-to-point request contains the MCDData ID and optionally the corresponding functional aliases of MCDData client 2 and either the MCDData ID or the functional alias of MCDData client 3. MCDData user at MCDData client 1 may include its associated functional alias.
3. MCDData server checks whether MCDData user at MCDData client 1 is authorized to send a remote MCDData IPcon point-to-point request and if MCDData client 2 and 3 are authorized to receive the IP connectivity service.
4. MCDData server sends the MCDData remote IPcon point-to-point request towards the MCDData client 2.
5. MCDData client 2 considers the provided targeted MCDData ID or targeted functional alias to establish the point-to-point IP connectivity to MCDData client 3 according to clause 7.14.2.2. The IP connectivity status shall be forwarded by MCDData client 2 to MCDData client 1.
6. MCDData client 2 send an MCDData remote IPcon point-to-point response to the MCDData server encompassing the IP connectivity status of the point-to-point IP connectivity session between MCDData client 2 and MCDData client 3.
7. The MCDData server forwards the MCDData remote IPcon point-to-point response to the remote MCDData client 1.

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

7.14.2.4.1 General

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

7.14.2.4.2 Procedure

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

Pre-conditions:

- The point-to-point IP connectivity has been established between MCDData client 2 and MCDData client 3.
- Optionally, the MCDData client 1 may have activated a functional alias to be used.
- MCDData client 1 is authorized to tear down point-to-point IP connectivity sessions.

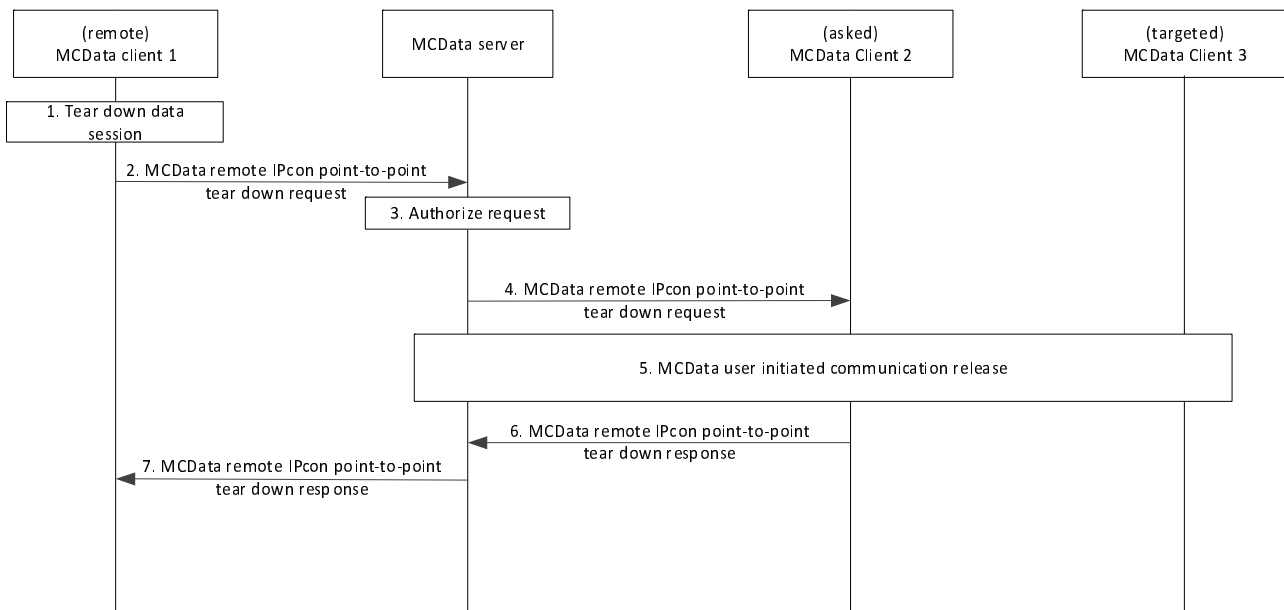


Figure 7.14.2.4.2-1: Remote initiated tear down of a point-to-point IP connectivity

1. MCDData client 1 would like to tear down a point-to-point IP connectivity between two other MCDData clients, the asked MCDData client 2 and the targeted MCDData client 3.
2. The MCDData client 1 sends an MCDData remote IPcon point-to-point tear down request towards the MCDData server. The MCDData remote IPcon point-to-point tear down request contains the MCDData IDs of MCDData client 2 and MCDData client 3. MCDData user at MCDData client 1 may include its associated functional alias.
3. MCDData server checks whether MCDData user at MCDData client 1 is authorized to send MCDData remote IPcon point-to-point tear down request and checks if the asked MCDData client 2 is allowed to tear down an IP connectivity point-to-point session.
4. MCDData server sends the MCDData remote IPcon point-to-point tear down request towards the MCDData client 2.
5. MCDData client 2 considers the provided targeted MCDData ID to tear down the point-to-point IP connectivity to MCDData client 3. The status of the IP connectivity tear down request shall be forwarded by MCDData client 2 to remote MCDData client 1.
6. MCDData client 2 sends MCDData remote IPcon point-to-point tear down response to the MCDData server encompassing the tear down IP connectivity status between MCDData client 2 and MCDData client 3.
7. The MCDData server forwards the MCDData remote IPcon point-to-point tear down response to the remote MCDData client 1.

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

7.14.2.5.1 General

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

7.14.2.5.2 Procedure

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

Pre-conditions:

- Optionally, the MCDData client 1 may have activated a functional alias to be used.

- A point-to-point IP connectivity is established between MCDData client 2 and MCDData client 3.
- MCDData client 1 is authorized to change remotely communication priority of a point-to-point IP connectivity session.

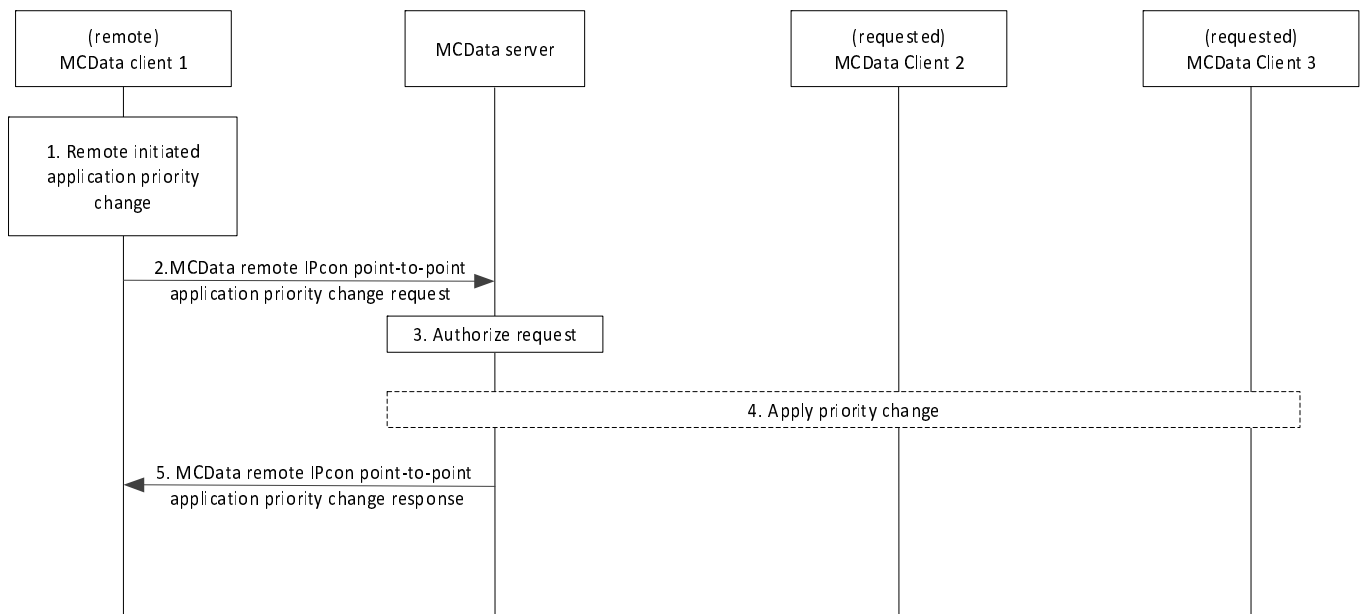


Figure 7.14.2.5.2-1: Point-to-point IP connectivity application priority change request by a remote MCDData client

1. MCDData client 1 would like to change the priority that corresponds to an established point-to-point IP connectivity between MCDData client 2 and MCDData client 3.
2. The MCDData client 1 sends a remote MCDData IPcon point-to-point application priority change request towards the MCDData server. The MCDData IPcon point-to-point application priority change request contains the MCDData IDs of MCDData client 2 and MCDData client 3. MCDData user at MCDData client 1 may include its associated functional alias.
3. MCDData server checks whether MCDData user at MCDData client 1 is authorized to send a remote MCDData IPcon point-to-point application priority change request.
4. MCDData server applies the requested priority to the point-to-point IP connectivity between MCDData client 2 and MCDData client 3.

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

5. MCDData server sends the remote MCDData IPcon point-to-point application priority change response to MCDData client 1 encompassing the priority status of the point-to-point IP connectivity between MCDData client 2 and MCDData 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 MCDData unaware data host to use usual MCDData service capabilities, e.g. data communication among them. This subclause describes the establishment of a group standalone IP connectivity to a selected MCDData 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 MCDData client is initiating group standalone MCDData IP connectivity communication session with an MCDData group for exchanging IP Data between group participants using MCDData IPcon-2 reference point.

Pre-conditions:

- MCDData client 1 to MCDData client n belong to the same MCDData group, are registered for receiving MCDData service and are affiliated to the corresponding MCDData 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 MCDData transmission.
- MCDData client 1 to MCDData client n are linked with individual data hosts.
- MCDData client 1 to MCDData client n belong to the same MCDData system.
- The data hosts linked with the MCDData clients already have an IP address allocated.
- MCDData clients have IP connectivity capabilities.
- The linked data hosts are authorized to use the MCDData clients to establish an IP connectivity.

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

- The MCDData server has subscribed to the MCDData functional alias controlling server within the MC system for functional alias activation/de-activation updates.
- MCDData clients understand the correspondence between the IP addresses of target data hosts and MCDData clients. How this relationship is determined is out of scope of the present document.
- MCDData clients understand the relationship between the addressing of IP packets which are intended to be sent to the group and the MCDData group address.

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

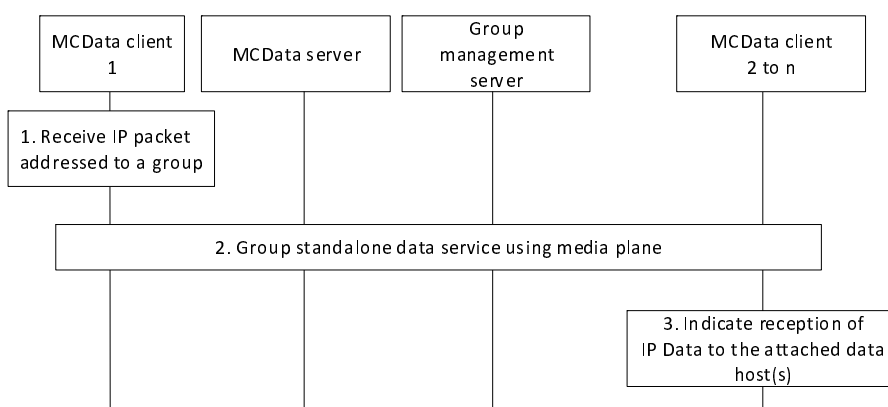


Figure 7.14.2.6.2-1: Establishment of IPcon group standalone communication session

1. MCDData client 1 receives an IP packet from the IP data host which is addressed to an IP address that signifies an MCDData group destination.
2. MCDData client 1 uses the MCDData 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 MCDData user that are members of the corresponding MCDData 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. MCDData 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.

7.17 Ad hoc group data communication

7.17.1 General

This subclause contains procedures for ad hoc group data communication across a single MCDData system for both SDS and FD services, and associated functions such as emergency data communication, Imminent peril data communication and others.

The ad hoc group data communications can use the participants list provided by either an initiator of the data communication or MCDData server. The MCDData server can use the criteria provided by the initiator of the data communication to determine the participants list along with its own criteria or local policies. The resulting ad hoc group uses the configuration of a separate preconfigured MCDData group.

NOTE 1: A preconfigured group which is intended only to provide configuration for the ad hoc group is identified by a parameter in the group configuration described in 3GPP TS 23.280 [5].

The preconfigured MCDData group that provides the configuration is not used for the MCDData group communication, it only provides configuration for one or more adhoc group data communications. The MCDData group ID of the ad hoc group data communication is provided by the MCDData server when the ad hoc group data communication is originated. In order to establish security context for the end-to-end secured ad hoc group data communication, the security related information is used from this preconfigured group.

NOTE 2: The configurations defined for the adhoc group data communication in user profile and service configuration document as described in the Annex A.3 and A.5 is applicable only for single MCDData system.

7.17.2 Common Information flows

7.17.2.1 Ad hoc group data session request (MCDData client – MCDData server)

Table 7.17.2.1-1 describes the information flow ad hoc group data session request from the MCDData client to the MCDData server.

Table 7.17.2.1-1 Ad hoc group data session request information elements

| Information Element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData ad hoc group ID (see NOTE 1) | O | The MCDData group ID to be associated with the ad hoc group data communication |
| Encryption supported (see NOTE 2) | O | Indicates whether this ad hoc group data communication supports end-to-end encryption |
| MCDData ID list (see NOTE 3, NOTE 5, NOTE 6) | O | MCDData IDs of the participants being invited for the ad hoc group data communication |
| SDP offer | M | Offered media parameters |
| Imminent peril indicator (see NOTE 4) | O | Indicates that the ad hoc group data communication request is for ad hoc group imminent peril data communication |
| Emergency Indicator (see NOTE 4) | O | Indicates that the ad hoc group data communication request is for ad hoc group emergency data communication |
| Broadcast indicator (see NOTE 4) | O | Indicates that the ad hoc group data communication request is for a broadcast ad hoc group data communication |
| MCDData ID list (see NOTE 3) | O | List of participants required to acknowledge the ad hoc group data communication before start of the data transmission |
| Location information | O | Location of the of the MCDData user sending data. |
| Criteria for determining the participants (see NOTE 5) | O | Carries the details of criteria or meaningful label identifying the criteria or the combination of both which will be used by the MCDData server for determining the participants e.g., it can be a location based criteria to invite participants in a particular area |
| Requested priority | O | Application priority level requested for this ad hoc group data communication |
| <p>NOTE 1: If this information element is not included, the MCDData server assigns an MCDData ad hoc group ID to be used for the ad hoc group data communication. This information element is returned to the MCDData user who is sending the data to use in the ad hoc group data communication. If the request follows an ad hoc group for emergency alert, then this element must be present.</p> <p>NOTE 2: This information element is present and set to true only if this ad hoc group data communication is encrypted. When the ad hoc group data communication is initiated with participants provided by the initiator this acts as an indicator that subsequent requests follow targeting the individual participants and carrying the relevant key material. If this information element is set to false or not present, then this ad hoc group data communication is unencrypted.</p> <p>NOTE 3: This element is included only when the data communication initiating client sends the list of participants.</p> <p>NOTE 4: If used, only one of these information elements is present.</p> <p>NOTE 5: Only one of these information elements is present.</p> <p>NOTE 6: If the request follows an ad hoc group for emergency alert, then this element is not present.</p> | | |

7.17.2.2 Ad hoc group data session request return (MCDData server – MCDData client)

Table 7.17.2.2-1 describes the information flow ad hoc group data session request return from the MCDData server to the MCDData client. This response could be intermediate response to provide the server assigned MCDData ad hoc group ID.

Table 7.17.2.2-1 Ad hoc group data session request return information elements

| Information Element | Status | Description |
|--------------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| MCDData ad hoc group ID | O | The MCDData group ID to be associated with the ad hoc group data communication which is either provided by the group data session initiator or assigned by the MCDData server. This information element shall be present if the authorization result is success. |
| Preconfigured MCDData group ID | O | Group identity whose configuration is to be applied for this ad hoc group data communication. |
| Authorization result | M | Indicate if authorization is success or failure |

7.17.2.3 Ad hoc group data session request (MCDData server – MCDData server)

Table 7.17.2.3-1 describes the information flow ad hoc group data session request between the MCDData servers.

Table 7.17.2.3-1 Ad hoc group data session request information elements

| Information Element | Status | Description |
|---|--------|---|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData ad hoc group ID | M | The MCDData group ID to be associated with the ad hoc group data communication |
| MCDData ID list (see NOTE 1, NOTE 3) | O | MCDData IDs of the participants being invited for the ad hoc group data communication |
| SDP offer | M | Media parameters of MCDData server |
| Broadcast indicator (see NOTE 2) | O | Indicates that the ad hoc group data communication request is for a broadcast ad hoc group data communication |
| Imminent peril indicator (see NOTE 2) | O | Indicates that the ad hoc group data communication request is for ad hoc group imminent peril data communication |
| Emergency Indicator (see NOTE 2) | O | Indicates that the ad hoc group data communication request is for ad hoc group emergency data communication |
| Preconfigured MCDData group ID | O | Group identity whose configuration is to be applied for this ad hoc group data communication. |
| Criteria for determining the participants (see NOTE 3) | O | Carries the details of criteria or meaningful label identifying the criteria or the combination of both which will be used by the MCDData server for determining the participants e.g., it can be a location based criteria to invite participants in a particular area |
| Requested priority | O | Application priority level requested for this group data communication |
| NOTE 1: This element is included only when the data communication initiating client sends the list of participants. | | |
| NOTE 2: If used, only one of these information elements is present. | | |
| NOTE 3: Only one of these information elements is present. | | |

Editor's Note: It is FFS if the server to server message is needed in a call request or response message.

7.17.2.4 Ad hoc group data session request (MCDData server – MCDData client)

Table 7.17.2.4-1 describes the information flow ad hoc group data session request from the MCDData server to the MCDData client.

Table 7.17.2.4-1 Ad hoc group data session request information elements

| Information Element | Status | Description |
|---|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| MCDData ID | M | The identity of the MCDData user towards which the request is sent |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group data communication |
| SDP offer | M | Media parameters of MCDData server |
| Broadcast indicator (see NOTE) | O | Indicates that the ad hoc group data communication request is for a broadcast ad hoc group data communication |
| Imminent peril indicator (see NOTE) | O | Indicates that the ad hoc group data communication request is for ad hoc group imminent peril data communication |
| Emergency Indicator (see NOTE) | O | Indicates that the ad hoc group data communication request is for ad hoc group emergency data communication |
| Preconfigured MCDData group ID | O | Group identity whose configuration is to be applied for this ad hoc group data communication. |
| NOTE: If used, only one of these information elements is present. | | |

7.17.2.5 Ad hoc group data session response (MCDData server – MCDData client)

Table 7.17.2.5-1 describes the information flow ad hoc group data session response from the MCDData server to the MCDData client.

Table 7.17.2.5-1 Ad hoc group data session response information elements

| Information Element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user sending data |
| Functional alias | O | The associated functional alias of the MCDData user sending data. |
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group data communication |
| SDP answer | O | Media parameters selected and present if the Result is success. |
| Result | M | Result of the group data communication request (success or failure) |

7.17.2.6 Ad hoc group data session response (MCDData server – MCDData server)

Table 7.17.2.6-1 describes the information flow ad hoc group data session response between the MCDData servers.

Table 7.17.2.6-1: Ad hoc group data session response information elements

| Information Element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user receiving data |
| Functional alias | O | The functional alias of the MCDData user receiving data |
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group data communication |
| SDP answer | O | Media parameters selected and present if the Result is success. |
| Result | M | Result of the ad hoc group data communication request (success or failure) |

Editor's Note: It is FFS if the server to server message is needed in a call request or response message.

7.17.2.7 Ad hoc group data session response (MCDData client – MCDData server)

Table 7.17.2.7-1 describes the information flow ad hoc group data session response from the MCDData client to the MCDData server.

Table 7.17.2.7-1 Ad hoc group data session response information elements

| Information Element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The identity of the MCDData user receiving data |
| Functional alias | O | The functional alias of the MCDData user receiving data |
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group data communication |
| SDP answer | O | Media parameters selected and present if the Result is success. |
| Result | M | Result of the ad hoc group data communication request (success or failure) |

7.17.2.8 Ad hoc group data session release request (MCDData server – MCDData client)

Table 7.17.2.8-1 describes the information flow ad hoc group data session release request from the MCDData server to the MCDData client.

Table 7.17.2.8-1 Ad hoc group data session release request information elements

| Information Element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The MCDData ID of the ad hoc group data communication participant |
| Functional alias | O | The functional alias of the ad hoc group data communication participant |
| MCDData ad hoc group ID | M | The MCDData group ID of the ad hoc group data communication on which data communication is released |

7.17.2.9 Ad hoc group data session release response (MCDData client – MCDData server)

Table 7.17.2.9-1 describes the information flow ad hoc group data session release response from the MCDData server to the MCDData client.

Table 7.17.2.9-1 Ad hoc group data session release response information elements

| Information Element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The MCDData ID of the ad hoc group data communication participant |
| Functional alias | O | The functional alias of the ad hoc group data communication participant |
| MCDData ad hoc group ID | M | The MCDData group ID of the ad hoc group data communication on which data communication is released |

7.17.2.10 Ad hoc group data session notify (MCDData server – MCDData client)

Table 7.17.2.10-1 describes the information flow ad hoc group data session notify from MCDData server to MCDData client.

Table 7.17.2.10-1: Ad hoc group data session notify

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ID | M | The MCDData ID of the ad hoc group data communication participant |
| Functional alias | O | The associated functional alias of the MCDData user of the ad hoc group data communication participant |
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group data communication |
| MCDData ID list | O | The list of the invited MCDData users who did not acknowledge the ad hoc group data communication request within a configured time or the list of the invited MCDData users who acknowledged the ad hoc group data communication request and joined or the list of the MCDData users who joined or left the ongoing MCDData ad hoc group data communication. |

7.17.2.11 Modify ad hoc group data session participants request (MCDData client – MCDData server)

Table 7.17.2.11-1 describes the information flow Modify ad hoc group data session participants request from the MCDData client to the MCDData server.

Table 7.17.2.11-1: Modify ad hoc group data session participants request

| Information element | Status | Description |
|---|--------|--|
| MCDData ID | M | The MCDData ID of the requesting MCDData user who is authorized to modify the ad hoc group data session participants |
| Functional alias | O | The functional alias of the requesting MCDData user who is authorized to modify the ad hoc group data session participants |
| MCDData ad hoc group ID | M | The MCDData group ID of ad hoc group data communication whose participants needs to be modified |
| MCDData ID list (see NOTE) | O | List of additional MCDData users to be added to the on-going ad hoc group data communication |
| MCDData ID list (see NOTE) | O | List of MCDData users to be removed from the on-going ad hoc group data communication |
| NOTE: Either one or both of these information elements is present | | |

7.17.2.12 Modify ad hoc group data session participants response (MCDData server – MCDData client)

Table 7.17.2.12-1 describes the information flow Modify ad hoc group data session participants response from the MCDData server to the MCDData client.

Table 7.17.2.12-1: Modify Ad hoc group data session participants response information elements

| Information Element | Status | Description |
|-------------------------|--------|---|
| MCDData ID | M | The MCDData ID of the requesting MCDData user who is authorized to modify the ad hoc group data session participants |
| Functional alias | O | The functional alias of the requesting MCDData user who is authorized to modify the ad hoc group data session participants |
| MCDData ad hoc group ID | M | The MCDData group ID of ad hoc group data communication whose participants needs to be modified |
| Result | M | Result of the modify ad hoc group data communication participants request (success or failure) |
| MCDData ID list | O | List of MCDData users who are not allowed to be added to the on-going ad hoc group data communication. This list is provided if the operation is partially success. |

7.17.2.13 Ad hoc group data session leave request (MCDData server – MCDData client)

Table 7.17.2.13-1 describes the information flow ad hoc group data session leave request from the MCDData server to the MCDData client.

Table 7.17.2.13-1 Ad hoc group data session leave request information elements

| Information Element | Status | Description |
|------------------------|--------|---|
| MCData ID | M | The MCData ID of the ad hoc group data communication participant leaving the ad hoc group data communication |
| MCData ad hoc group ID | M | The MCData group ID of ad hoc group data communication |
| Reason to leave | O | Carries the reason of why the MCData client is being asked to leave the ongoing ad hoc group data communication |

7.17.2.14 Ad hoc group data session leave response (MCData client – MCData server)

Table 7.17.2.14-1 describes the information flow Ad hoc group data session leave response from the MCData client to the MCData server.

Table 7.17.2.14-1 Ad hoc group data session leave response information elements

| Information Element | Status | Description |
|------------------------|--------|--|
| MCData ID | M | The MCData ID of the ad hoc group data communication participant leaving the ad hoc group data communication |
| MCData ad hoc group ID | M | The MCData group ID of ad hoc group data communication |

7.17.2.15 Ad hoc group data session get userlist (MCData server – MCData server)

Table 7.17.2.15-1 describes the information flow ad hoc group data session get userlist from one MCData server to another MCData server.

Table 7.17.2.15-1: Ad hoc group data session get userlist

| Information element | Status | Description |
|---|--------|--|
| MCData ad hoc group ID | M | The MCData group ID associated with the ad hoc group communication |
| Criteria for determining the participants | M | Carries the details of criteria or meaningful label identifying the criteria or the combination of both which will be used by the MCData server for determining the participants e.g., it can be a location based criteria to invite participants in a particular area |

7.17.2.16 Ad hoc group data session get userlist response (MCData server – MCData server)

Table 7.17.2.16-1 describes the information flow ad hoc group data session get userlist response from one MCData server to another MCData server.

Table 7.17.2.16-1: Ad hoc group data session get userlist response

| Information element | Status | Description |
|-------------------------|--------|--|
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group communication |
| MCDData ID list | M | List of MCDData IDs meeting the criteria specified in the ad hoc group data session get userlist |

7.17.2.17 Ad hoc group data session add user notification (MCDData server – MCDData server)

Table 7.17.2.17-1 describes the information flow Ad hoc group data session add user notification from one MCDData server to another MCDData server. This notification is to provide the list of MCDData IDs meeting the criteria specified in the ad hoc group data session get userlist request from one MCDData server to another MCDData server.

Table 7.17.2.17-1: Ad hoc group data session add user notification information elements

| Information Element | Status | Description |
|-------------------------|--------|--|
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group communication |
| MCDData ID list | M | List of MCDData IDs meeting the criteria specified in the ad hoc group data session get userlist |

7.17.2.18 Ad hoc group data session remove user notification (MCDData server – MCDData server)

Table 7.17.2.18-1 describes the information flow Ad hoc group data session remove user notification from one MCDData server to another MCDData server. This notification is to provide the list of MCDData IDs no longer meeting the criteria specified in the ad hoc group data session get userlist request from one MCDData server to another MCDData server.

Table 7.17.2.18-1: Ad hoc group data session remove user notification information elements

| Information Element | Status | Description |
|-------------------------|--------|--|
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group communication |
| MCDData ID list | M | List of MCDData IDs no longer meeting the criteria specified in the ad hoc group data session get userlist |

7.17.2.19 Ad hoc group data session release notification (MCDData server – MCDData server)

Table 7.17.2.19 -1 describes the information flow Ad hoc group data session release notification from one MCDData server to another MCDData server. This notification is to indicate to stop evaluating the criteria to determine the participants list if another MCDData server is having the criteria specified in the ad hoc group data session get userlist request.

Table 7.17.2.19-1: Ad hoc group data session release notification information elements

| Information Element | Status | Description |
|-------------------------|--------|---|
| MCDData ad hoc group ID | M | The MCDData group ID associated with the ad hoc group communication |

7.17.3 Common Ad hoc group data communication procedures

7.17.3.1 Ad hoc group data communication procedures in single MCDData system

7.17.3.1.1 Ad hoc group data communication setup

Figure 7.17.3.1.1-1 below illustrates the ad hoc group data communication setup procedure initiated by an authorized user.

Pre-conditions:

1. The authorized user at MCDData client 1 wants to invite MCDData users at MCDData client 2, MCDData client 3 and MCDData client 4 for the ad hoc group data communication or to invite the ad hoc group member if the ad hoc group call follows an ad hoc group emergency alert, the MCDData client 1 is aware of the ad hoc group ID.
2. Number of participants being invited for the ad hoc group data communication is within the limit.
3. End-to-End encryption is supported for this ad hoc group data communication.
4. MCDData client 1 is aware of the MCDData IDs of the participants.

NOTE 1: Selection of MCDData IDs of the participants can be manual or from the user profile configuration data or by any other means. This is left for the implementation.

5. The pre-configured group identity and pre-configured group configuration to be used for an ad hoc group have been preconfigured in MCDData client and other participants of ad hoc group have also received the relevant security related information to allow them to communicate in an ad hoc group communication.

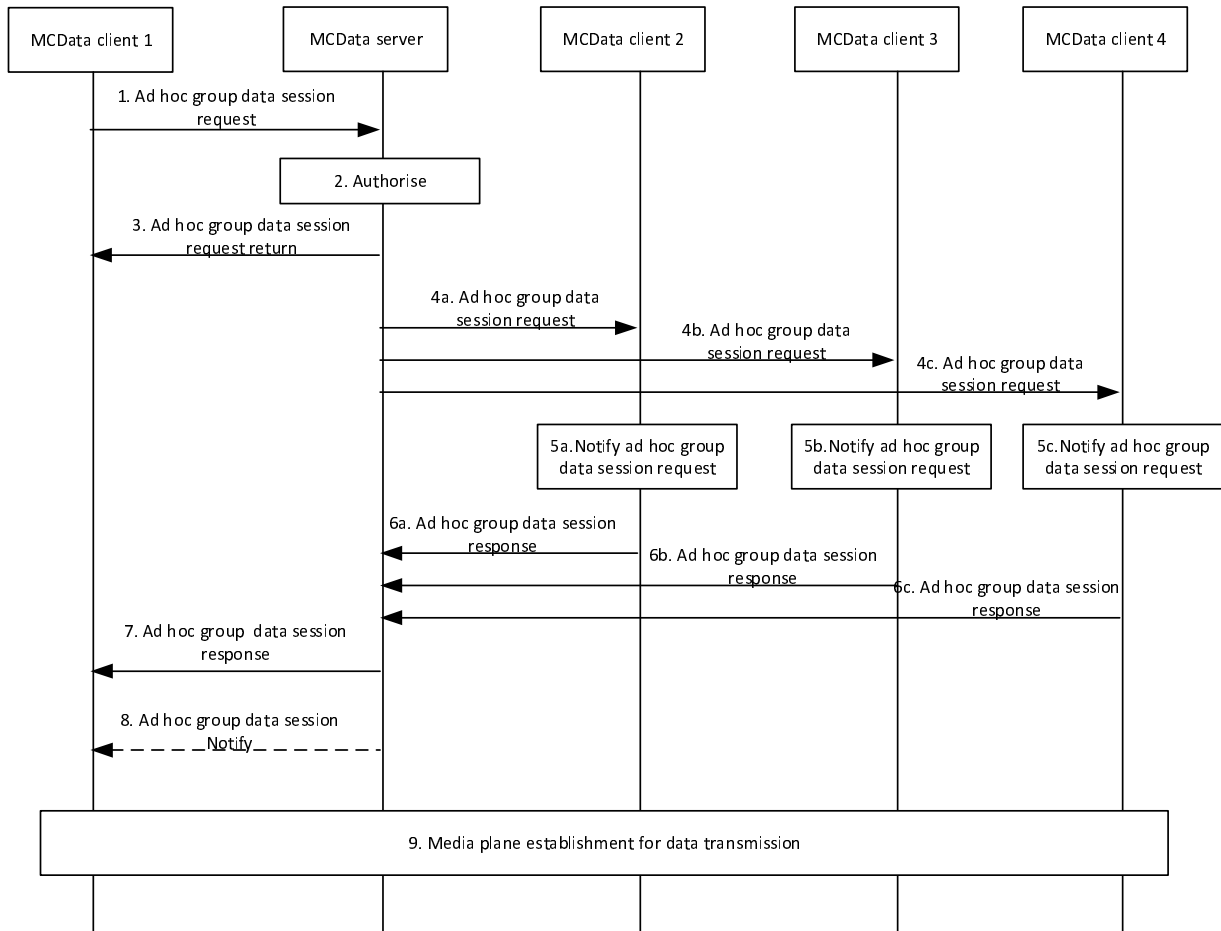


Figure 7.17.3.1.1-1: Ad hoc group data communication setup

1. User at MCData client 1 would like to initiate an ad hoc group data communication. The MCData client 1 initiates the ad hoc group data communication by sending the ad hoc group data session request containing the list of participants or an ad hoc group ID from an ad hoc group emergency alert to the MCData server. Encryption supported information element shall be set to true since end-to-end encryption is supported. An SDP offer containing the MCData client media parameters is included. If the MCData user of MCData client 1 has selected a functional alias, then the ad hoc group data session request contains that functional alias.

If the MCData user at MCData client 1 initiates an MCData emergency ad hoc group data 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 ad hoc group data session request shall contain an emergency indicator;
 - ii. 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.
2. If the ad hoc group communication is supported, the MCData server verifies whether the user at MCData client 1 is authorized to initiate an ad hoc group data session request. If not authorized, the MCData server rejects the ad hoc group data session request as specified in the step 3. The MCData server accepts the ad hoc group data session request if the ad hoc group data communication is supported and authorized. If authorised, it validates whether the number of invited participants is within the configured limit before proceeding with the data communication setup.

If functional alias is present, the MCDData server checks whether the provided functional alias allowed to be used and has been activated for the user.

If location information was included in the ad hoc group data session request, the MCDData server checks the privacy policy of the MCDData user to decide if the location information of MCDData client 1 can be provided to other users on the ad hoc group data communication (refer to Annex A.3 "Authorisation to provide location information to other MCDData users on a data communication when talking").

If an emergency indicator is present in the received MCDData ad hoc group data session request, the MCDData ad hoc group is considered to be in the in-progress emergency state until this ad hoc group data communication is terminated; and

If an imminent peril indicator is present in the received MCDData ad hoc group data session request, the MCDData ad hoc group is considered to be in the in-progress imminent peril state until this ad hoc group data communication is terminated.

If the information received in the request in step 1 does not contain an ad hoc group ID from an ad hoc group emergency alert, the MCDData server forms the ad hoc group by using received information, and determines the preconfigured group to be used for the configuration of the ad hoc group. The MCDData server assigns a MCDData group ID for the newly formed ad hoc group.

The MCDData server considers the ad hoc group data communication participants as implicitly affiliated to the ad hoc group.

3. The MCDData server shall send the ad hoc group data session request return message to MCDData client 1 containing the below:
 - i. The MCDData ad hoc group ID, either generated by the MCDData server, if not included in the ad hoc group call request of step 1, or if the provided MCDData ad hoc group ID is not accepted by the MCDData server; or provided by the MCDData client 1 if the ad hoc group ID is from an ad hoc group emergency alert;
 - ii. The group ID of the pre-configured group to be used for the ad hoc group communication (only included when the ad hoc group data session is authorized); and
 - iii. Result of whether the ad hoc group data session request is authorized or not

If the ad hoc group data session request is not authorized, the MCDData server and MCDData client 1 shall not proceed with the rest of the steps.

- 4a-4c. The MCDData server sends the ad hoc group data session requests towards the MCDData clients of the invited users based on step 1. While sending the ad hoc group data session requests, the MCDData server shall remove the information elements that are not required to be conveyed to the target MCDData clients (e.g. MCDData ID list of the users who are required to acknowledge)

- 5a-5c. The receiving MCDData clients notify their corresponding MCDData user about the incoming ad hoc group data session request with the information of the MCDData group ID for the ad hoc group.

- 6a-6c. The receiving MCDData clients may accept or reject the ad hoc group data session requests and send ad hoc group data session responses to the MCDData server. The response may also contain a functional alias of the responding MCDData user, which is verified (valid and activated for the user) by the MCDData server.

7. The MCDData server sends the ad hoc group data session response to MCDData client 1 through the signalling path to inform about successful data communication establishment.

NOTE 2: Steps 5 to step 7 can start to occur before all of step 4 is completed since the MCDData server do not require to wait for the previous ad hoc group data session request to complete before sending the ad hoc group data session request to another participant.

8. If the initiating MCDData user requires the acknowledgement from the invited MCDData users, and the required MCDData users do not acknowledge the data session setup within a configured time (the "acknowledged data communication setup timeout"), then the MCDData server may proceed with or abandon the data session and then notify the initiating MCDData user that the acknowledgements did not include all required members according to ad hoc group data communication policy from the user profile configuration. The MCDData server may notify the initiating MCDData user of all MCDData users who did not acknowledge the ad hoc group data session request within the configured time. This notification may be sent to the initiating MCDData user by the MCDData server

more than once during the data communication when MCDData users join or leave the MCDData ad hoc group data communication.

- MCDData client 1, MCDData client 2, MCDData client 3 and MCDData client 4 establish media plane for data communication.

NOTE 3: Step 9 can occur any time following step 7 if the conditions to proceed with the data communication are met.

7.17.3.1.2 Release ad hoc group data communication

The procedure focuses on the case where the MCDData server releases an ongoing MCDData ad hoc group data communication for all the participants of that ad hoc group data communication, since at least one of the release conditions are met e.g., due to hang time expiry, last participant leaving, second last participant leaving, initiator leaving.

Figure 7.17.3.1.2-1 below illustrates the signalling control plane procedure for the MCDData server initiating termination of an ongoing ad hoc group data communication.

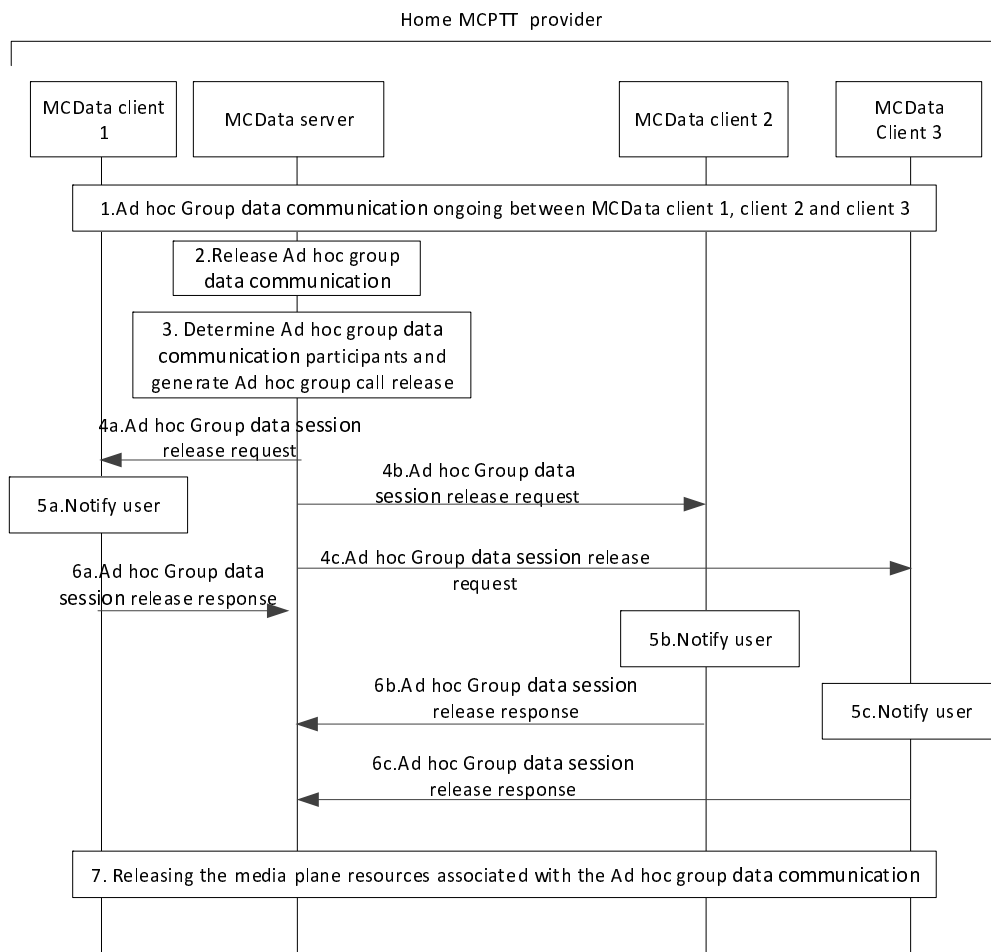


Figure 7.17.3.1.2-1: Release ad hoc group data communication

- It is assumed that MCDData users on MCDData client 1, client 2 and client 3 are already part of the ongoing ad hoc group data communication.
- MCDData server would like to release the MCDData ad hoc group data communication which is ongoing e.g., due to hang time expiry, last participant leaving, second last participant leaving, initiator leaving.

3. MCDATA server identifies the participants of the ongoing ad hoc group data communication and generates ad hoc group data session release request to release ongoing data communication. The MCDATA server cancels the in-progress emergency state or in-progress imminent peril state of the ad hoc group if the ad hoc group data communication is an emergency or imminent peril data communication respectively.
4. MCDATA server sends ad hoc group data session release request via SIP core towards each participant of the ongoing ad hoc group data communication.
5. MCDATA users are notified about the release of the ad hoc group data communication.
6. MCDATA client(s) receiving ad hoc group data session release request, acknowledge towards the MCDATA server by sending an ad hoc group data session release response.

NOTE: If the initiator of the ad hoc group data communication does not supply the participants list, the MCDATA client(s) may choose to store the list of participants for easy re-initiation of another ad hoc group data communication with the same participants.

7. MCDATA client 1, client 2 and client 3 have successfully released the media plane resources associated with the ad hoc group data communication that is terminated and the ad hoc group ceases to exist (i.e., further data communication is not possible over the same ad hoc group), otherwise if the ad hoc group data communication follows an ad hoc group emergency alert the ad hoc group continues to exist (i.e., further data communication is possible over the same ad hoc group).

7.17.3.1.3 Ad hoc group data communication setup with MCDATA server determining the participants lists

Figure 7.17.3.1.3-1 below illustrates the ad hoc group data communication setup procedure initiated by the MCDATA user and MCDATA client 1 wherein the list of participants is determined by the MCDATA server based on the criteria received from the MCDATA client.

Pre-conditions:

1. The MCDATA user at MCDATA client 1 is authorized to initiate ad hoc group data communication.
2. The MCDATA user at MCDATA client 1 wants to invite MCDATA users who are satisfying certain criteria for the ad hoc group data communication.

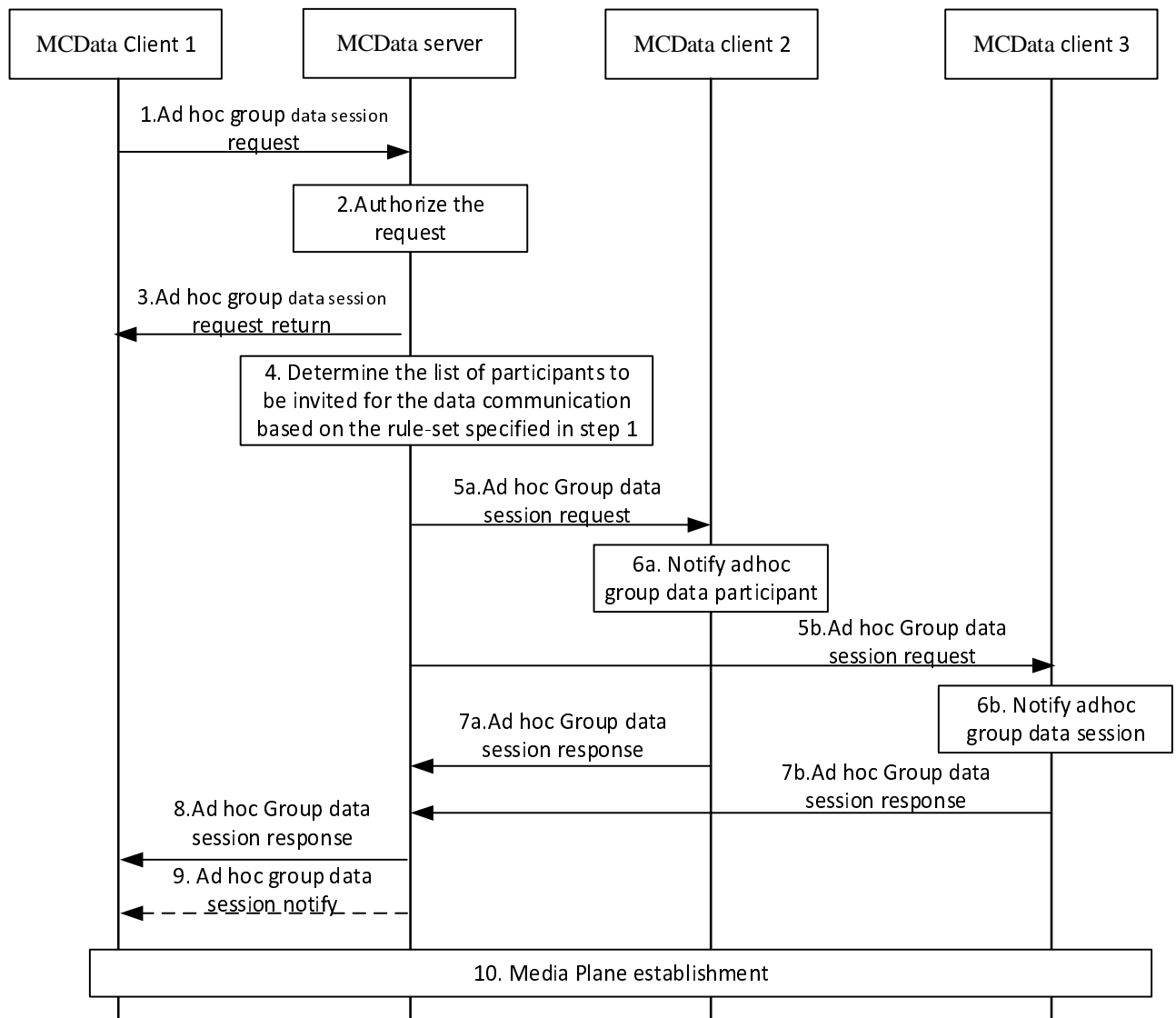


Figure 7.17.3.1.3-1: Ad hoc group data communication participants determined by MCDData server

1. User at MCDData client 1 would like to initiate an ad hoc group data communication in-order to invite the participants satisfying specific criteria. The MCDData client 1 initiates the ad hoc group data communication by sending the ad hoc group data session request containing the details of the criteria to be applied by the MCDData server for determining the participants list. If end-to-end encryption is supported, the Encryption supported information element shall be set to true and pre-configured MCDData group whose configuration is to be applied is included. An SDP offer containing the MCDData client media parameters is included. If the MCDData user of MCDData client 1 has selected a functional alias, then the ad hoc group data session request contains that functional alias.

If the MCDData user at MCDData client 1 initiates an MCDData emergency ad hoc group data communication or the MCDData emergency state is already set for the MCDData client 1 (due to a previously triggered MCDData emergency alert):

- i. the MCDData ad hoc group data session request shall contain an emergency indicator;
- ii. if the MCDData emergency state is not set already, MCDData client 1 sets its MCDData emergency state. The MCDData emergency state of MCDData client 1 is retained until explicitly cancelled by the user of MCDData client 1.

2. If the ad hoc group data communication is supported, the MCDData server verifies whether the user at MCDData client 1 is authorized to initiate an ad hoc group data communication. If not authorized, the MCDData server rejects the ad hoc group data session request as specified in the step 3. The MCDData server accepts the ad hoc group data session request if the ad hoc group data communication is supported and authorized.

If functional alias is present, the MCDData server checks whether the provided functional alias is allowed to be used and has been activated for the user.

If location information was included in the ad hoc group data session request, the MCDData server checks the privacy policy of the MCDData user to decide if the location information of MCDData client 1 can be provided to other users on the data communication (refer to Annex A.3 "Authorisation to provide location information to other MCDData users on a data communication when talking").

If an emergency indicator is present in the received MCDData ad hoc group data session request, the MCDData ad hoc group is considered to be in the in-progress emergency state until this ad hoc group data communication is terminated;

If an imminent peril indicator is present in the received MCDData ad hoc group data session request, the MCDData ad hoc group is considered to be in the in-progress imminent peril state until this ad hoc group data communication is terminated. and

If the information received in the request in step 1 does not contain an ad hoc group ID from an ad hoc group emergency alert, the MCDData server forms the ad hoc group by using received information, and determines the preconfigured group to be used for the configuration of the ad hoc group. The MCDData server assigns a MCDData group ID for the newly formed ad hoc group. Further, the ad hoc group participants are included to ad hoc group once determined as specified in the step 4.

3. The MCDData server shall send the ad hoc group data session request return message to MCDData client 1 containing the below:
 - i. The MCDData ad hoc group ID, either generated by the MCDData server, if not included in the ad hoc group call request of step 1, or if the provided MCDData ad hoc group ID is not accepted by the MCDData server, or provided by the MCDData client 1 if the ad hoc group ID is from an ad hoc group emergency alert;
 - ii. The group ID of the pre-configured group to be used for the ad hoc group communication (only included when the ad hoc group data session is authorized); and
 - iii. Result of whether the ad hoc group data session request is authorized or not

If the ad hoc group data session request is not authorized, the MCDData server and MCDData client 1 shall not proceed with the rest of the steps.

4. The MCDData server determines the list of participants to be invited for the ad hoc group data communication based on the information present in the information element Criteria for determining the participants. This information element could carry either criteria or indicator identifying pre-defined criteria or a combination of both.

NOTE 1: The content of the Criteria information element, the details of the pre-defined criteria, and the way how their MCDData server determines the list of participants are left to implementation.

5. The MCDData server sends the ad hoc group data session requests towards the MCDData clients 2 and 3. While sending the ad hoc group data session requests, the MCDData server shall remove the information elements that are not required to be conveyed to the target MCDData clients. This request carries the pre-configured group ID whose configuration is to be applied for this ad hoc group data communication if end-to-end encryption is requested. The MCDData server considers the ad hoc group data communication participants as implicitly affiliated to the ad hoc group.
6. The receiving MCDData clients notify their corresponding MCDData user about the incoming ad hoc group data communication.
7. The receiving MCDData clients may accept or reject the ad hoc group data session requests and send ad hoc group data session responses to the MCDData server. The response may also contain a functional alias of the responding MCDData user, which is verified (valid and activated for the user) by the MCDData server.

8. The MCDData server sends the ad hoc group data session response to MCDData client 1 through the signalling path to inform about successful data communication establishment.
9. The MCDData server may notify the initiating MCDData user of all MCDData users who acknowledged the ad hoc group data session request and joined the ad hoc group data communication. This notification may be sent to the initiating MCDData user by the MCDData server more than once during the data communication when MCDData users join or leave the MCDData ad hoc group data communication. If the authorized users (not shown in figure) are configured to receive the participants information of ad hoc group data communication, the MCDData server provides ad hoc group data session notify about all MCDData users who acknowledged the ad hoc group data session request and joined the ad hoc group data communication, and when MCDData users joins or leaves the MCDData ad hoc group data communication.

NOTE 2: The authorized user can learn who is currently affiliated to the current ad hoc group data communication.

10. MCDData client 1, MCDData client 2 and MCDData client 3 establish media plane resources.

7.17.3.1.4 Modification of ad hoc group data communication participants by an authorized user

Figure 7.17.3.1.4-1 below illustrates the modification of ad hoc group data communication participants procedure by an authorized user.

Pre-conditions:

1. An MCDData ad hoc group data communication is already in progress the participants list is provided by the originating MCDData user while initiating the MCDData ad hoc group data communication.
2. The participants of the MCDData ad hoc group call belong to the single MCDData system.
3. The MCDData users on MCDData client 1, MCDData client 3 to MCDData client n are on an ongoing ad hoc group data communication.
4. The MCDData user at MCDData client 1 determines to remove the user of MCDData client 3 from the ad hoc group data communication and add user of MCDData client 2 into the on-going ad hoc group data communication.

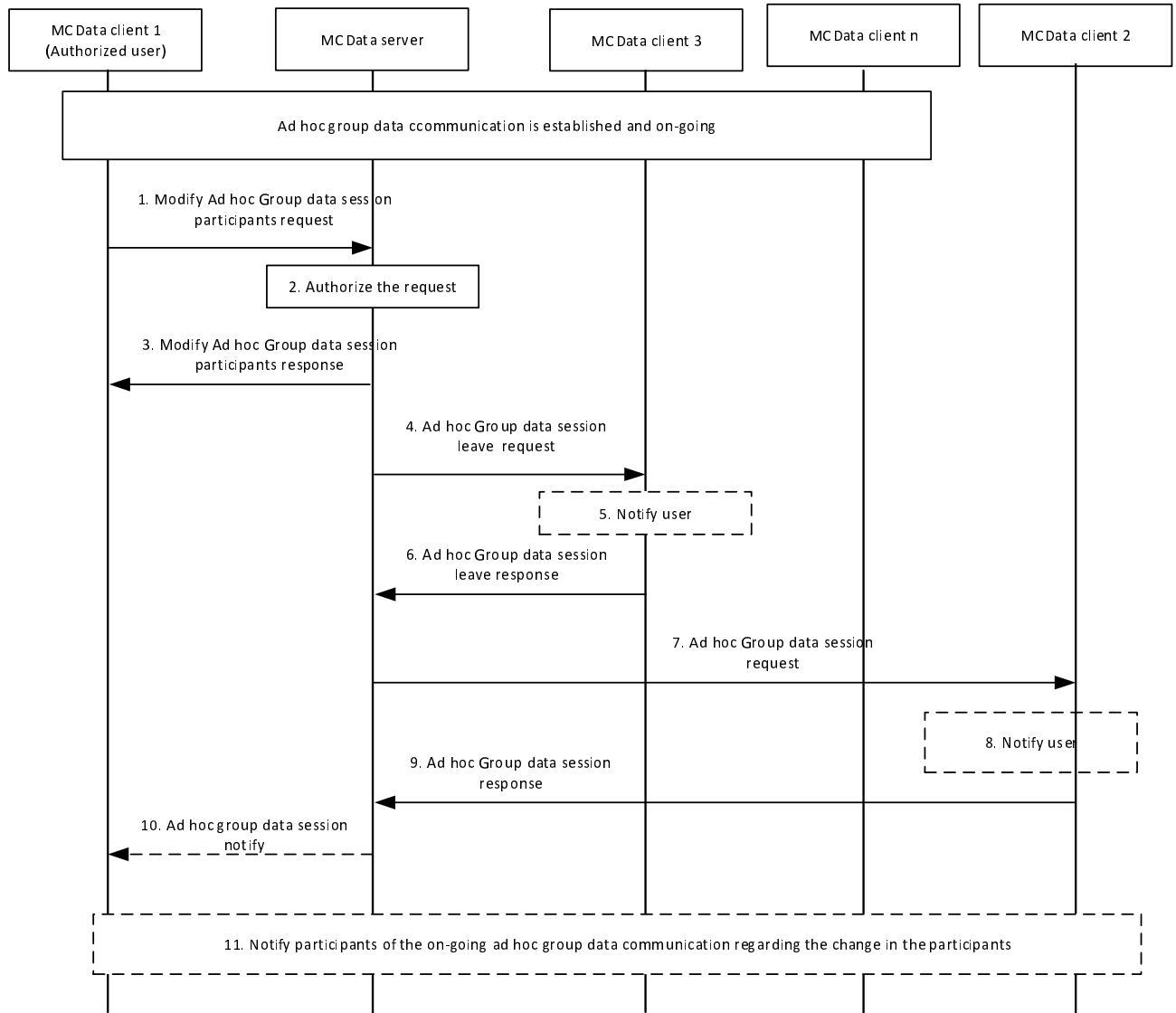


Figure 7.17.3.1.4-1: Modification of ad hoc group data communication participants by an authorized user

1. The MCDATA user at the MCDATA client 1 is authorized and requests to modify ad hoc group data communication participants. The MCDATA client 1 sends the modify ad hoc group data session participants request to the MCDATA server in order to remove MCDATA client 3 from the ongoing ad hoc group data communication and add MCDATA client 2 into it.
2. The MCDATA server verifies whether the MCDATA client 1 is authorized to add or remove (modify) the participants of the on-going ad hoc group data communication.
3. The MCDATA server sends modify ad hoc group data session participants response to the MCDATA client 1.
4. The MCDATA server sends the ad hoc group data session leave request to the MCDATA client 3 in order to remove it from the on-going ad hoc group data communication.
5. The MCDATA client 3 notifies the user of the ad hoc group data session leave request.
6. The MCDATA client 3 sends the ad hoc group data session leave response to the MCDATA server.

7. The MCDData server sends the ad hoc group data session request towards MCDData client 2.

NOTE: Steps 7 to 9 can occur at any time following step 3.

9. The receiving MCDData client 2 notifies the user about the incoming ad hoc group data communication.

9. The MCDData client 2 accepts the ad hoc group data session request and send ad hoc group data session responses to the MCDData server. The response may also contain a functional alias of the responding MCDData user, which is verified (valid and activated for the user) by the MCDData server. The MCDData server considers the MCDData user as implicitly affiliated to the ad hoc group.

10. The MCDData server may notify the initiating MCDData user of all the users who are added to the on-going ad hoc group data communication. This notification may be sent to the initiating MCDData user by the MCDData server more than once during the data communication when MCDData users join or leave the ad hoc group data communication.

11. The MCDData server may notify the participants about the change in the participants of on-going ad hoc group data communication.

7.17.3.1.5 Modification of ad hoc group data communication participants by the MCDData server

Figure 7.17.3.1.5-1 below illustrates the modification of ad hoc group data communication participants procedure by the MCDData server.

Pre-conditions:

1. The MCDData client 1 is the initiator of the ad hoc group data communication.
2. MCDData server determined the participants for the ad hoc group data communication based on the criteria specified by the MCDData client 1 while initiating the ad hoc group data communication.
3. MCDData server continuously evaluates the criteria to monitor the list of users who meets or not meets the criteria for participating in the on-going ad hoc group data communication.
4. The MCDData server detects that the MCDData client 5 satisfies the criteria and MCDData client 4 stops to meet the criteria specified by the MCDData client 1.

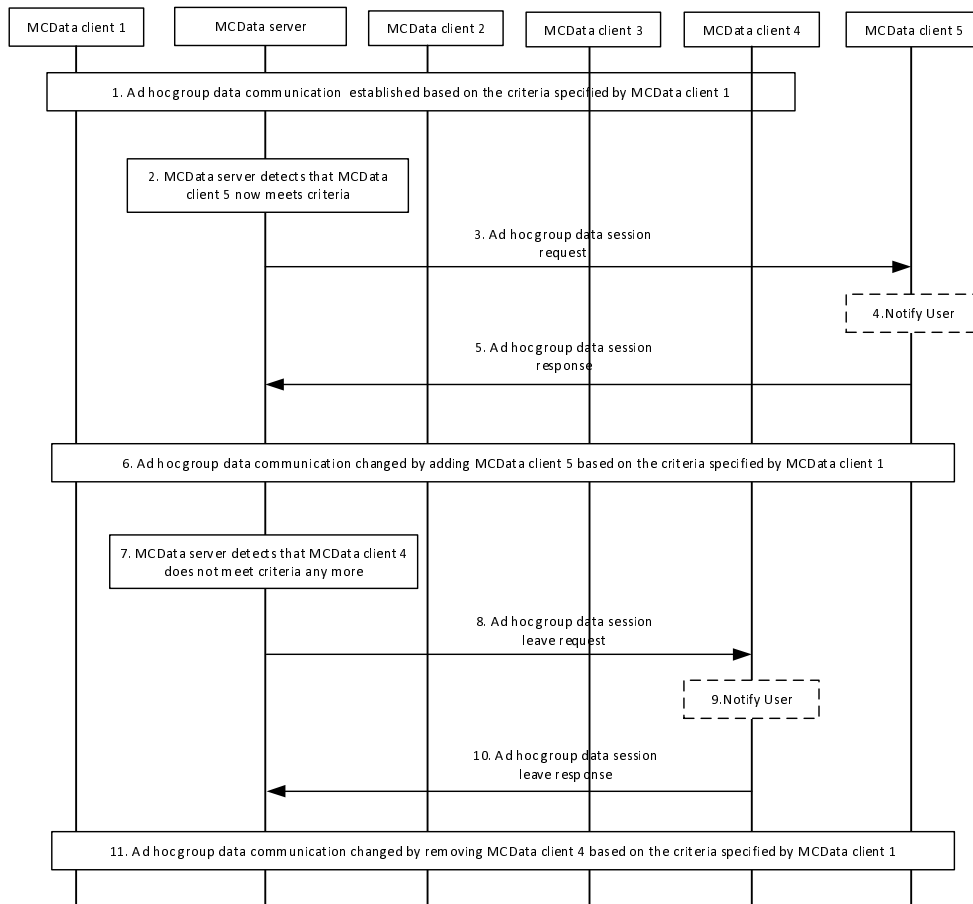


Figure 7.17.3.1.5-1: Modification of ad hoc group data communication participants by the MCDATA server

1. The ad hoc group data communication is established and on-going with the participants MCDATA client 1, MCDATA client 2, MCDATA client 3 and MCDATA client 4. The participants list is determined by the MCDATA server based on the criteria specified by the MCDATA client 1 while initiating the data communication.
2. The MCDATA server detects that the MCDATA client 5 satisfies the criteria specified by the MCDATA client.
3. The MCDATA server sends the ad hoc group data session request to the MCDATA client 5.
4. The MCDATA client 5 notifies the user about the incoming ad hoc group data communication.
5. The MCDATA client 5 accepts the ad hoc group data session request and sends the ad hoc group data session response to the MCDATA server.
6. The on-going ad hoc group data communication is updated by adding MCDATA client 5 which satisfies the criteria specified by the MCDATA client 1.
7. The MCDATA server detects that the MCDATA client 4 is no more satisfying the criteria to be the participant of the ad hoc group data communication.
8. The MCDATA server sends the ad hoc group data communication leave request to the MCDATA client 4 and removes it from the on-going ad hoc group data communication.
9. The MCDATA client 4 notifies the user of the ad hoc group data session leave request.
10. The MCDATA client 4 sends the ad hoc group data session leave response to the MCDATA server.
11. The on-going ad hoc group data communication is updated by removing MCDATA client 4, which no more satisfies the criteria specified by the MCDATA client 1.

7.17.3.2 Ad hoc group data communication involving multiple MC systems

7.17.3.2.1 Procedure for ad hoc group data communication setup – Participants list provided by the Initiator

Figure 7.17.3.2.1-1 illustrates the procedure for ad hoc group data communication setup procedure initiated by an authorized user wherein either a list of participants or an ad hoc group ID from an ad hoc group emergency alert is provided by the authorised user and the determined MCDData users are from multiple MCDData systems.

Pre-conditions:

1. The security aspects of sharing the user information between primary and partner MC systems shall be governed as per the service provider agreement between them. In this case, it is considered that the partner MC system shares their users' information to the primary MC system.
2. The authorized MCDData user/dispatcher belongs to the primary MC system.
3. The MCDData server of the primary MC system is where the authorized MCDData user/dispatcher creates the ad hoc group.
4. Some users of the ad hoc group belong to partner MC systems.
5. The preconfigured group identity and preconfigured group configuration (e.g. security related information) to be used for an ad hoc group have been preconfigured in the MCDData client and other participants of ad hoc group have also received the relevant security related information to allow them to communicate in an ad hoc group communication.
6. If an ad hoc group ID from an ad hoc group emergency alert is used to invite the ad hoc group members, MCDData client is aware of the ad hoc group ID.

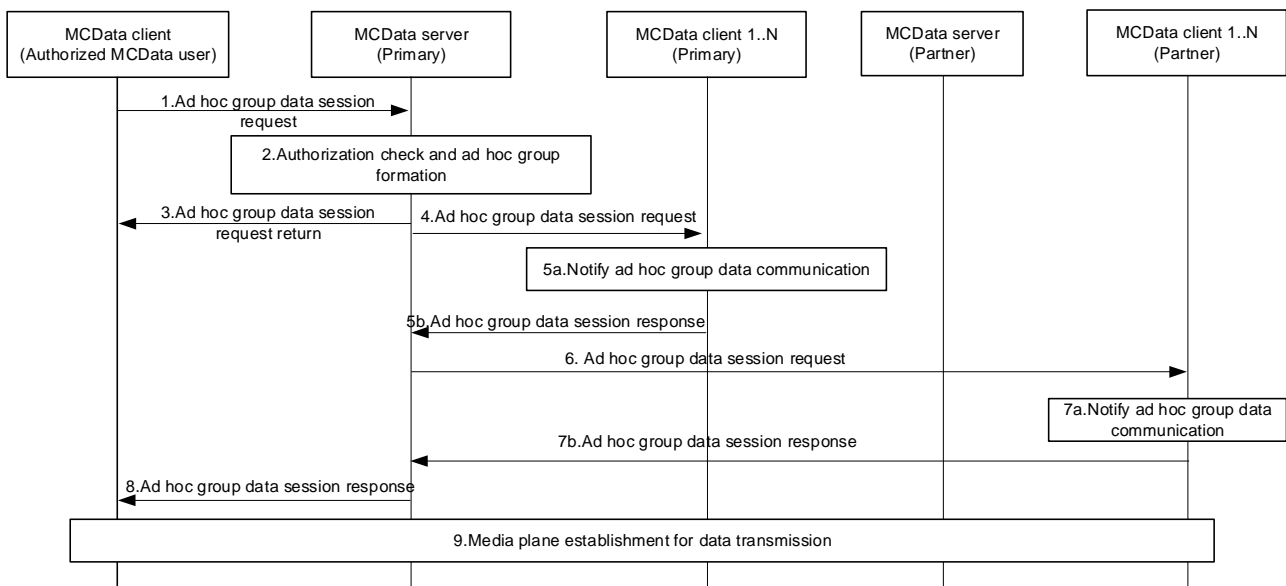


Figure 7.17.3.2.1-1: Ad hoc group data communication setup

1. The MCDData client of the authorized user initiates an ad hoc group data communication with multiple users from primary and partner MC systems. An ad hoc group data session request message with the information of the participants MCDData IDs or an ad hoc group ID if the ad hoc group call follows an ad hoc group emergency alert is routed to the MCDData server of the primary MC system.
2. If the ad hoc group call is supported, the MCDData server of the primary MC system verifies whether the user at MCDData client is authorized to initiate an ad hoc group communication. If not authorized, the MCDData server of the primary MC system rejects the ad hoc group data session request as specified in the step 3.

If the information received in the request in step 1 does not contain an ad hoc group ID from an ad hoc group emergency alert, the MCDData server of the primary MC system forms the ad hoc group by using information

received in step 1 and further determines the preconfigured group to be used for the configuration (e.g. security related information). The MCDData server assigns an MCDData ad hoc group ID for the newly formed ad hoc group.

If no MCDData ad hoc group ID was included in the ad hoc group data session request of step 1, or if the provided MCDData ad hoc group ID is not accepted by the MCDData server, the MCDData server assigns a MCDData group ID for the newly formed ad hoc group. The MCDData server considers the ad hoc group communication participants as implicitly affiliated to the ad hoc group.

NOTE 1: The newly formed ad hoc group information including the MCDData group ID and the list of users is held in dynamic data in the MCDData server.

3. The MCDData server shall send the ad hoc group data session request return message to MCDData client containing the below:
 - i. The MCDData ad hoc group ID either generated by the MCDData server or provided by the MCDData client if the ad hoc group ID is from an ad hoc group emergency alert (only included when the ad hoc group data session request is authorized);
 - ii. The group ID of the pre-configured group to be used for the ad hoc group data communication (only included when the ad hoc group data session request is authorized); and
 - iii. Result of whether the ad hoc group data session request is authorized or not.

If the ad hoc group data session request is not authorized, MCDData client 1 shall not proceed with the rest of the steps.

4. The MCDData server of the primary MC system sends the ad hoc group data session request to the group members of the ad hoc group belonging to the primary MC system. While sending the ad hoc group data session requests, the MCDData server shall remove the information elements that are not required to be conveyed to the target MCDData clients (e.g. MCDData ID list of the users who are required to acknowledge).
- 5a-5b. The MCDData clients receive in the ad hoc group data session request with the information of the MCDData group ID for the ad hoc group and further notify their corresponding MCDData user. The group members of the ad hoc group of the primary MC system may accept or reject the ad hoc group data session requests and respond with the ad hoc group data session responses.
6. The primary MCDData server further initiates an ad hoc group data session request message to the MCDData users of the partner MC system. The ad hoc group data session request message is routed to the MCDData users via the MCDData server of the partner MC system.
- 7a-7b. The MCDData clients receive in the ad hoc group data session request the information of the MCDData group ID for the ad hoc group and further notify their corresponding MCDData user. The MCDData users upon receipt of the invitation may accept or reject the ad hoc group data session requests, and respond with the ad hoc group data session responses. The ad hoc group data session response message is routed to the MCDData server of the primary MC system via the MCDData server of the partner MC system.
8. The MCDData server of the primary MC system provides an ad hoc group data session response message to the MCDData client of the authorized MCDData user upon receiving response to the corresponding ad hoc group data session request in step 1. The ad hoc group data session response will consist of the success or failure result and/or detailed reason information in case of failure.

NOTE 2: The ad hoc group data session response messages may be used by The MCDData client of the authorized user to determine if the ad hoc group communication will proceed.

9. Upon successful ad hoc group data session setup, a group data communication is established amongst the group members from primary and partner MC systems. The media plane resources for data communication are established.

7.17.3.2.2 Procedure for ad hoc group data communication release by MCDData server – Participants list provided by the Initiator

This procedure focuses on the case where an MCDData server initiates the termination of an ongoing MCDData ad hoc group data communication for all the participants of that group data communication, since at least one of the

termination conditions are met e.g., due to hang time expiry, last participant leaving, second last participant leaving, initiator leaving, or minimum number of affiliated MCData group members are not present.

Procedures in figure 7.17.3.2.2-1 are the signalling control plane procedures for the MCData server initiating termination of an ongoing MCData ad hoc group data communication.

Pre-condition:

- The MCData client 1 and MCData client 2 belong to primary MC system. The MCData client 3 belongs to partner MC system.
- The MCData users on MCData client 1, client 2 and client 3 are already part of the ongoing ad hoc group data communication (e.g. as a result of ad hoc group data communication setup as specified in clause 7.17.3.2.1).

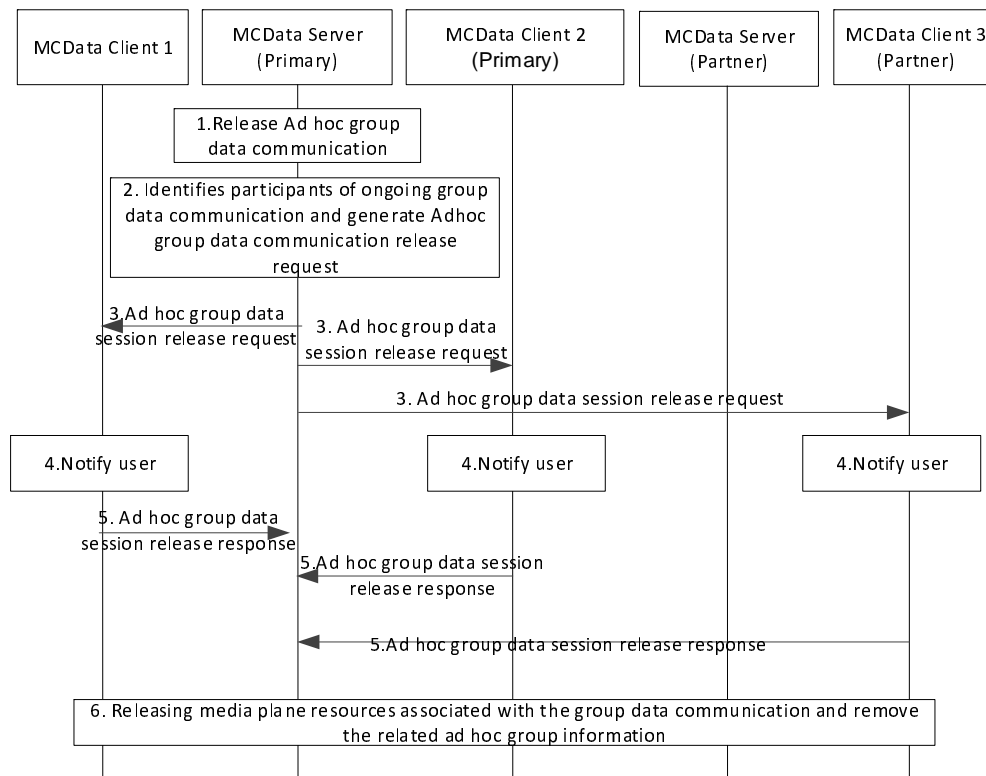


Figure 7.17.3.2.2-1: Ad hoc group data communication release

1. The MCData server determines to release the ongoing ad hoc group data communication e.g., due to a hang timer expiry, last participant leaving, second last participant leaving, initiator leaving, or a minimum number of affiliated MCData group members not present.
2. The MCData server identifies the participants of the ongoing ad hoc group data communication and generates ad hoc group data session release request to release ongoing data communication.
3. The MCData server sends an ad hoc group data session release request to each participant of the ongoing group data communication. If the participants belong to the partner MC system, then the ad hoc group data session release request is routed to the MCData clients of the partner MC system via the partner MCData server.
4. The MCData users are notified about the release of the ad hoc group data communication.
5. The MCData client(s), send an acknowledgment to the MCData server by sending an ad hoc group data session release response.

6. The MCDData client 1, client 2 and client 3 have successfully released media plane resources associated with the ad hoc group data communication that is terminated. The primary MCDData server removes the ad hoc group information from the dynamic data and thus the ad hoc group ceases to exist.

7.17.3.2.3 Ad hoc group data communication setup – Participants list determined by the MCDData server

Figure 7.17.3.2.3-1 below illustrates the ad hoc group data communication setup procedure initiated by an authorized user wherein the list of participants is determined by the MCDData server based on the criteria received from the MCDData client and determined MCDData users are from multiple MCDData systems.

Pre-conditions:

1. The security aspects of sharing the user information between primary and partner MC systems shall be governed as per the service provider agreement between them. In this case, it is considered that the partner MC system share their users' information to the primary MC system.
2. The authorized MCDData user/dispatcher belongs to the primary MC system.
3. The MCDData server 1 of the primary MC system is where the authorized MCDData user/dispatcher creates the ad hoc group.
4. Some users of the ad hoc group may belong to MCDData server 2 of the partner MC systems.
5. The pre-configured group identity and pre-configured group configuration to be used for an ad hoc group have been preconfigured in MCDData client and other participants of ad hoc group have also received the relevant security related information to allow them to communicate in an ad hoc group communication.

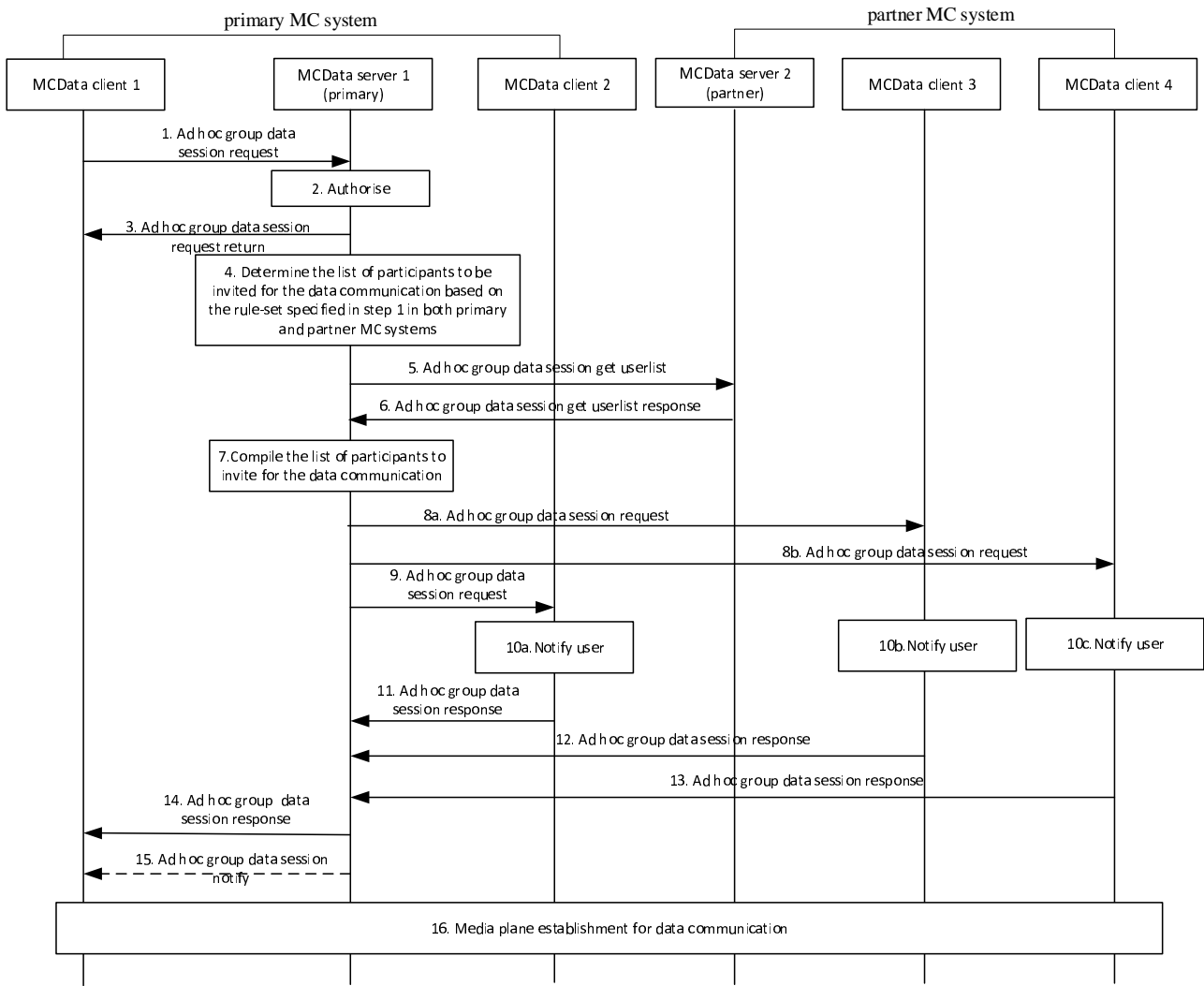


Figure 7.17.3.2.3-1: Ad hoc group data communication setup involving multiple MCDData systems

1-3. Same as described in subclause 7.17.3.1.1.

4. The MCDData server 1 determines the list of participants from the primary MC system and determines the partner MC system to be involved in the ad hoc group data communication based on the information present in the information element Criteria for determining the participants. This information element carries the criteria, indicator identifying pre-defined criteria, or a combination of both.

NOTE 1: The content of the Criteria information element, the details of the pre-defined criteria, and the way how their MCDData server determines the list of participants are left to implementation.

5. The MCDData server 1 needs to involve the partner MC system based on the agreement and based on the criteria for determining the participants list, it sends the ad hoc group data session get userlist request to the MCDData server 2. This request carries the criteria specified in the step 1.

6. MCDData server 2 evaluates the criteria and determines the participants satisfying the criteria (i.e. MCDData client 3 and MCDData client 4) and sends the response containing the list of MCDData users satisfying the criteria. The MCDData server 2 may apply local policies if any while determining the participants satisfying the criteria.

7. The MCDData server 1 compiles the list of participants to be invited for the ad hoc group data communication including the participants from both primary and partner MC system.

8a-8b. The MCDData server 1 sends the ad hoc group data session request towards the MCDData client 3 and MCDData client 4. While sending the ad hoc group data session request, the MCDData server shall remove the information elements that are not required to be conveyed to the target MCDData clients. This request carries the pre-configured group ID whose configuration is to be applied for this ad hoc group data communication if end-to-

end encryption is requested. The MCDData server 1 considers the ad hoc group communication participants as implicitly affiliated to the ad hoc group.

9. The MCDData server 1 sends the ad hoc group data session request towards the MCDData client 2. While sending the ad hoc group data session request, the MCDData server shall remove the information elements that are not required to be conveyed to the target MCDData clients. This request carries the pre-configured group ID whose configuration is to be applied for this ad hoc group data communication if end-to-end encryption is requested.
- 10a-10c. The MCDData clients receive incoming ad hoc group data communication and further notify their corresponding MCDData users.
11. The MCDData client 2 accepts the ad hoc group data session request, and sends ad hoc group data session response to the MCDData server 1.
12. The MCDData client 3 accepts the ad hoc group data session request, and sends ad hoc group data session response to the MCDData server 1.
13. The MCDData client 4 accepts the ad hoc group data session request, and sends ad hoc group data session response to the MCDData server 1.
14. The MCDData server 1 sends the ad hoc group data session response to MCDData client 1 through the signalling path to inform about result of the participants responses.
15. The MCDData server 1 may notify the initiating MCDData user of all MCDData users who acknowledged the ad hoc group data session request and joined the ad hoc group data communication. The MCDData server 1 more than once during the data communication may send this notification to the initiating MCDData user whenever an MCDData user joins or leaves the MCDData ad hoc group data communication. If the authorized users (not shown in figure) are configured to receive the participants information of ad hoc group data communication, the MCDData server provides ad hoc group data session notify about all MCDData users who acknowledged the ad hoc group data session request and joined the ad hoc group data communication, and when MCDData users joins or leaves the MCDData ad hoc group data communication.
16. The MCDData client 1, MCDData client 2, MCDData client 3 and MCDData client 4 establish media plane resources for data communication.

NOTE 2: The ad hoc group data session request and response exchanged between MCDData server 1 of primary MC system and MCDData client 3/MCDData client 4 will always traversal through the MCDData server 2.

7.17.3.2.4 Modifying of ad hoc group data communication participants by the MCDData server

Figure 7.17.3.2.4-1 below illustrates the MCDData server modifying the ad hoc group data communication participants procedure involving multiple MCDData systems.

Pre-conditions:

1. The MCDData user at MCDData client 1 is authorized to initiate ad hoc group data communication.
2. The MCDData server 1 of the primary and MCDData server 2 of the partner MCDData systems determined the participants for the ad hoc group data communication based on the criteria specified by the MCDData client 1 while initiating the ad hoc group data communication.
3. The ad hoc group data communication is established and on-going with the participants MCDData client 1, MCDData client 2, and MCDData client 4. The participants list is determined by both primary and partner MC systems.
4. The MCDData server 1 of the primary and MCDData server 2 of the partner MCDData systems continuously evaluates the criteria to monitor the list of users who meets or not meets the criteria for participating in the on-going ad hoc group data communication.
5. The MCDData server 1 of the primary MCDData system detects that the MCDData client 3 meets the criteria and MCDData client 2 stops to meet the criteria specified by the MCDData client 1.
6. The MCDData server 2 of the partner MCDData system detects that the MCDData client 5 meets the criteria and MCDData client 4 stops to meet the criteria specified by the MCDData client 1.

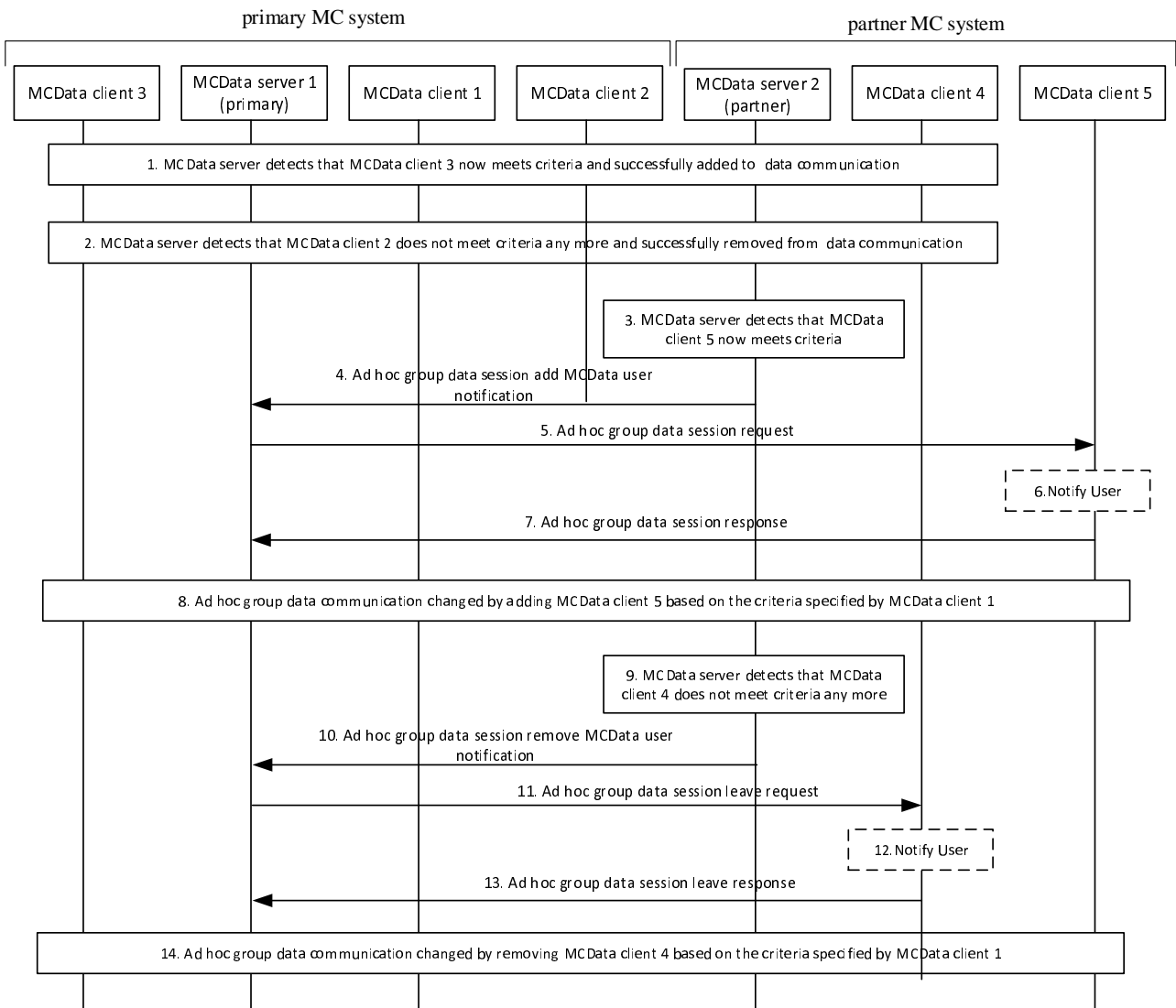


Figure 7.17.3.2.4-1: Modification of ad hoc group data communication participants by the MCDATA server

1. The MCDATA server 1 detects that MCDATA client 3 now meets criteria and successfully added to group data communication.
2. The MCDATA server 1 detects that MCDATA client 2 does not meet criteria any more and successfully removed from a group data communication.
3. The MCDATA server 2 detects that the MCDATA client 5 meets the criteria specified by the MCDATA client 1.
4. The MCDATA server 2 sends the notification to MCDATA server 1 of the primary MCDATA system to add the MCDATA user at MCDATA client 5 to on-going ad hoc group data communication.
5. The MCDATA server 1 sends the ad hoc group data session request to the MCDATA client 5.
6. The MCDATA client 5 notifies the user about the incoming ad hoc group data communication.
7. The MCDATA client 5 accepts the ad hoc group data session request and sends the ad hoc group data session response to the MCDATA server 1.

8. The on-going ad hoc group data communication is updated by adding MCDData client 5 which meets the criteria specified by the MCDData client 1.
9. The MCDData server 2 detects that the MCDData client 4 is no longer satisfying the criteria to be the participant of the ad hoc group data communication.
10. The MCDData server 2 sends the notification to MCDData server 1 of the primary MCDData system to remove the MCDData user at MCDData client 4 from on-going ad hoc group data communication.
11. The MCDData server 1 sends the ad hoc group data session leave request to the MCDData client 4 and removes it from the on-going ad hoc group data communication.
12. The MCDData client 4 notifies the user of the ad hoc group data session leave request.
13. The MCDData client 4 sends the ad hoc group data session leave response to the MCDData server 1.
14. The on-going ad hoc group data communication is updated by removing MCDData client 4, which no longer meets the criteria specified by the MCDData client 1.

NOTE: The ad hoc group data session request and response exchanged between MCDData server 1 of primary MC system and MCDData client 4/MCDData client 5 will always traversal through the MCDData server 2.

7.17.3.2.5 Release ad hoc group data communication and stop determining the ad hoc group data communication participants by partner MCDData system – Participants list determined by the MCDData server

Figure 7.17.3.2.5-1 below illustrates the release of ad hoc group data communication and stopping of MCDData server at the partner MC system from determining the ad hoc group data communication participants' procedure once involving multiple MCDData systems. This procedure, in particular describes about how the partner MC system is notified about ad hoc group data communication release to cease the determining of the participants by the partner MC system.

Pre-conditions:

1. The MCDData user at MCDData client 1 is authorized to initiate ad hoc group data communication.
2. The ad hoc group data communication is established and on-going with the participants MCDData client 1, MCDData client 2, MCDData client 3, and MCDData client 4.
3. The MCDData server 1 of the primary and MCDData server 2 of the partner MCDData systems determined the participants for the ad hoc group data communication based on the criteria specified by the MCDData client 1 while initiating the ad hoc group data communication.
4. The MCDData server 1 of the primary and MCDData server 2 of the partner MCDData systems continuously evaluates the criteria to monitor the list of users who meets or not meets the criteria for participating in the on-going ad hoc group data communication.

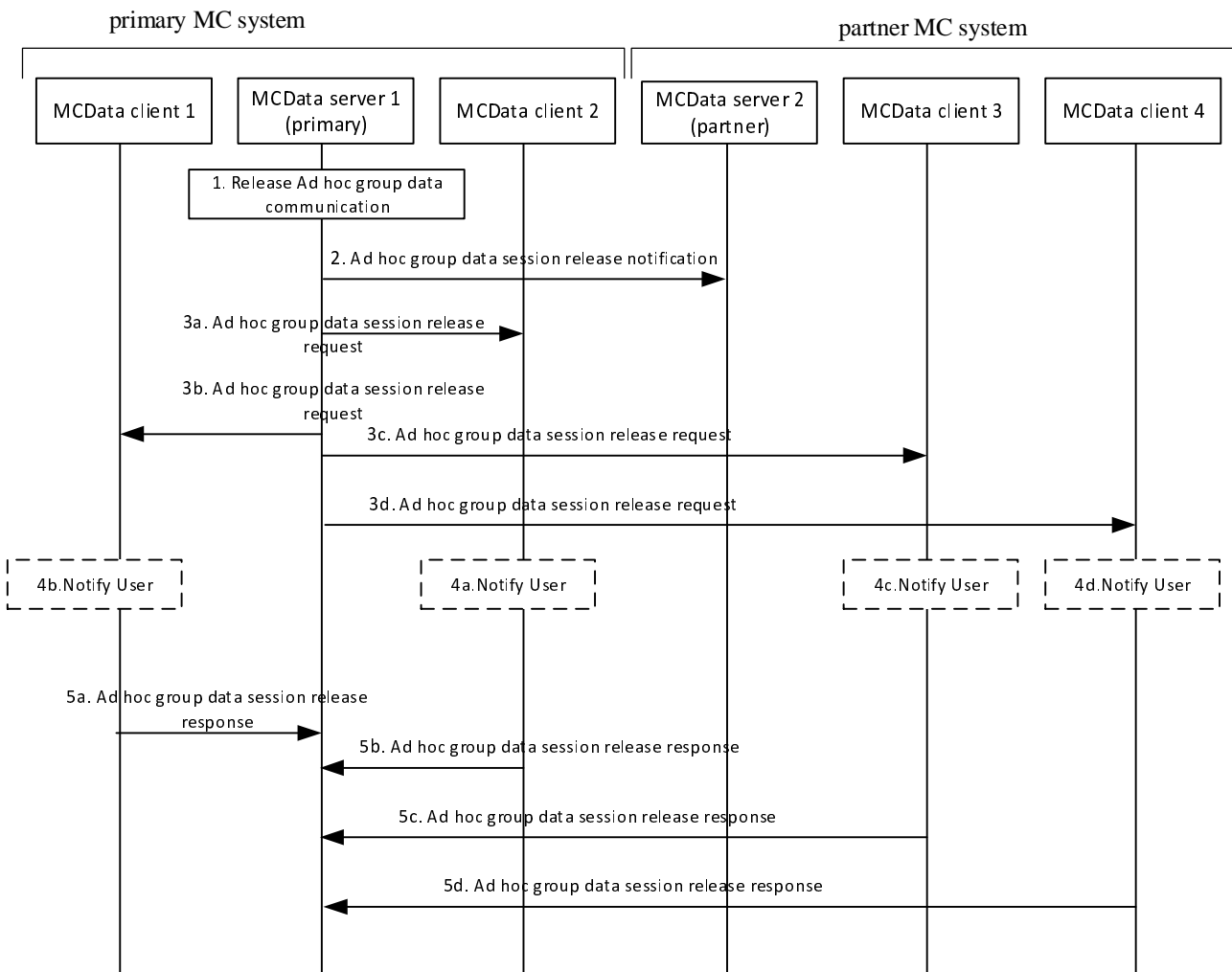


Figure 7.17.3.2.5-1: MCData server releases an ad hoc group data communication and stops the determination of ad hoc group data communication participants involving multiple MCData systems

1. The MCData server 1 detects that the ad hoc group data communication which is ongoing is to be released e.g., due to hang time expiry, last participant leaving, second last participant leaving, initiator leaving, or minimum number of affiliated MCData group members are not present.
2. The MCData server 1 sends the ad hoc group data session release notification to MCData server 2 of the partner MCData system about the ad hoc group data communication release to stop determining the participants list by MCData server 2 of the partner MCData system.
- 3a-3d. The MCData server 1 sends ad hoc group data session release request to all the participants of the ad hoc group data communication.
- 4a-4d. The MCData clients notifies the user about the release of the ad hoc group data communication.
- 5a-5d. All the participants of the ad hoc group data communication receives the ad hoc group data session release request and sends the ad hoc group data session release response to the MCData server 1 of the primary MCData server.

NOTE: The ad hoc group data session request and response exchanged between MCData server 1 of primary MC system and MCData client 3/MCData client 4 will always traversal through the MCData server 2.

7.17.3.2.6 Modification of ad hoc group data communication participants by an authorized user

Figure 7.17.3.2.6-1 below illustrates the MCData user modifying the ad hoc group data communication participants procedure involving multiple MCData systems.

Pre-conditions:

1. An MCData ad hoc group data communication is already in progress and the participants list provided by the originating MCData user while initiating the MCData ad hoc group data communication.
2. The participants of the MCData ad hoc group data communication belongs to the multiple MCData system.
3. The MCData user at MCData client 1 determines that the MCData client 3 needs to be invited to on-going ad hoc group data communication and MCData client 2 needs to be removed from the on-going ad hoc group data communication from the primary MCData system.
4. The MCData user at MCData client 1 determines that the MCData client 5 needs to be invited to on-going ad hoc group data communication and MCData client 4 needs to be removed from the on-going ad hoc group data communication from the partner MCData system.

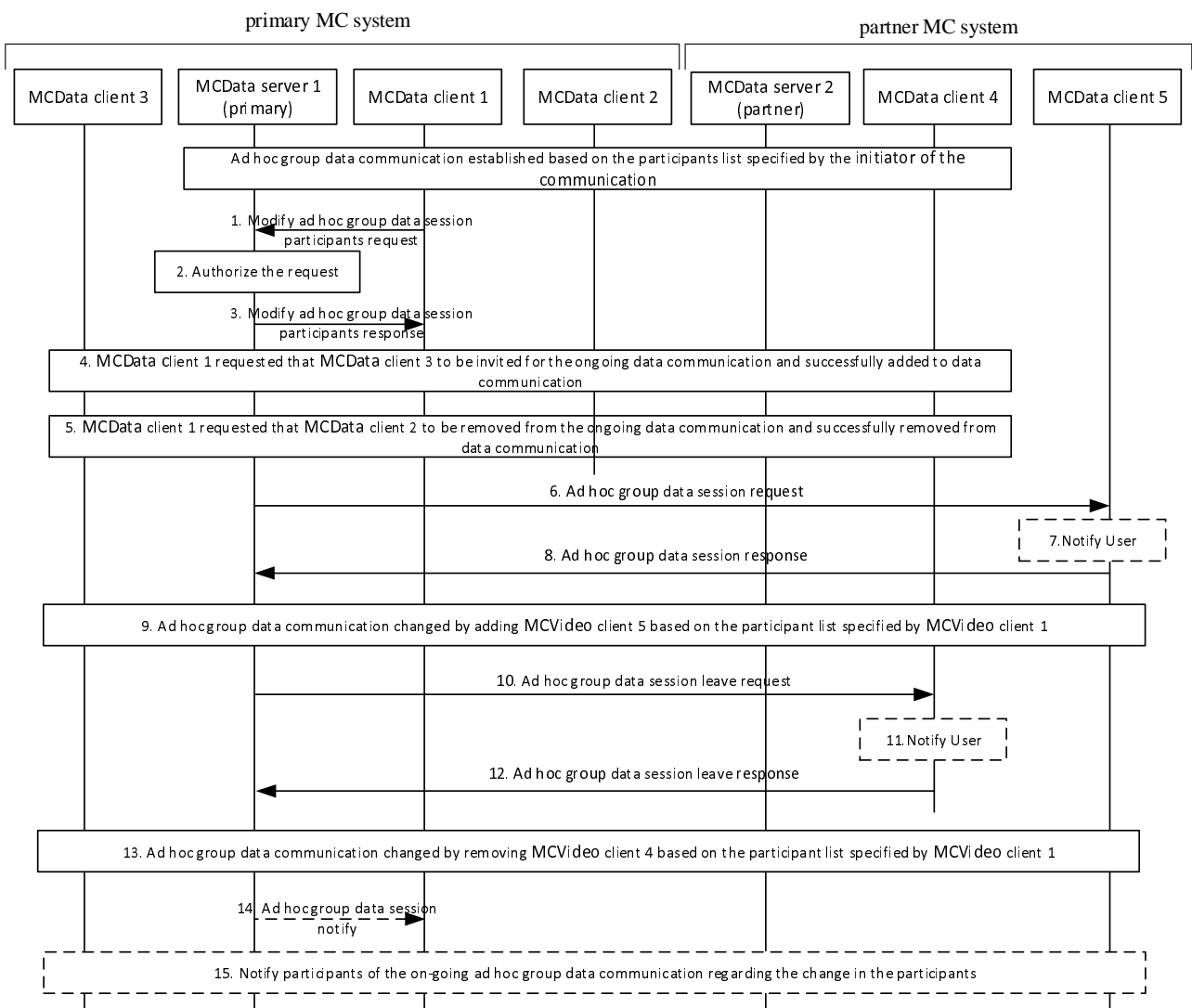


Figure 7.17.3.2.6-1: Modification of ad hoc group data communication participants by an authorized user

1. The MCData client 1 sends the modify ad hoc group data session participants request to the MCData server 1 to remove both MCData client 2 and MCData client 4 from the on-going ad hoc group data communication and to add both MCData client 3 and MCData client 5 into on-going ad hoc group data communication.

2. The MCDATA server 1 verifies whether the MCDATA client 1 is authorized to add or remove (modify) the participants of the on-going ad hoc group data communication.
 3. The MCDATA server 1 sends modify ad hoc group data session participants response to the MCDATA client 1.
 4. The MCDATA server 1 determines that MCDATA client 1 has requested that MCDATA client 3 from the primary MC system be invited to an on-going ad hoc group data communication and successfully added to the data communication according to the procedure defined in clause 7.17.3.1.4.
 5. The MCDATA server 1 determines that MCDATA client 1 has requested that MCDATA client 2 from the primary MC system be removed from the on-going ad hoc group data communication and successfully removed from data communication according to the procedure defined in clause 7.17.3.1.4.
 6. The MCDATA server 1 determines that MCDATA client 1 has requested that MCDATA client 5 from the partner MC system be invited to an on-going ad hoc group data communication. The MCDATA server 1 sends the ad hoc group data session request to the MCDATA client 5.
 7. The MCDATA client 5 notifies the user about the incoming ad hoc group data communication.
 8. The MCDATA client 5 accepts the ad hoc group data session request and sends the ad hoc group data session response to the MCDATA server 1.
 9. The on-going ad hoc group data communication is updated by adding MCDATA client 5 which is based on the modify participant list provided by the MCDATA client 1.
 10. The MCDATA server 1 determines that MCDATA client 1 has requested that MCDATA client 4 from the partner MC system be removed from the on-going ad hoc group data communication. The MCDATA server 1 sends the ad hoc group data session leave request to the MCDATA client 4.
 11. The MCDATA client 4 notifies the user of the ad hoc group data session leave request.
 12. The MCDATA client 4 sends the ad hoc group data session leave response to the MCDATA server 1.
 13. The on-going ad hoc group data communication is updated by removing MCDATA client 4, which is based on the modify participant list provided by the MCDATA client 1.
- NOTE: The ad hoc group data communication request and response exchanged between MCDATA server 1 of primary MC system and MCDATA client 4/MCDATA client 5 will always traversal through the MCDATA server 2.
14. The MCDATA server 1 may notify the initiating MCDATA user of all the users who are added to the on-going ad hoc group data communication. This notification may be sent to the initiating MCDATA user by the MCDATA server more than once during the data communication when MCDATA users join or leave the ad hoc group data communication.
 15. The MCDATA server 1 may notify the authorized participants about the change in the participants list of on-going ad hoc group data communication.

7.17.4 Ad hoc group short data service data communication procedures

7.17.4.1 General

This subclause contains procedures for ad hoc group short data service data communication across a single MCDATA system, and uses the common procedures defined in the subclause 7.17.3 in conjunction with the procedures defined in this subclause. Other common procedures specified in the 7.17.3 are used at any time after Ad hoc group short data service data communication establishment based on the need of it. These procedures are applicable for Group standalone short data service using media plane and Group short data service session as specified in the subclause 7.4.2.6 and subclause 7.4.2.7 respectively.

7.17.4.2 Information flows for short data service specific

Table 7.17.4.2-1 describes the information elements that are specific to short data service and are used along with the common information flows defined in the subclause 7.17.2 for the Ad hoc group short data service data communication.

These information elements are included when an Ad hoc group data session request sent from the MCDData client to the MCDData server, between the MCDData servers, and from the MCDData server to the MCDData client.

Table 7.17.4.2-1: short data service specific

| Information element | Status | Description |
|--|--------|--|
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData transaction to which the current transaction is a reply to |
| Transaction type | M | Session based transactions |
| 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 MCDData user consumption |
| Application identifier (see NOTE 1) | 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 |
| NOTE 1: The application identifier shall be included only if the payload destination type indicates that the SDS message is for application consumption. | | |

7.17.4.3 Ad hoc group short data service data communication procedures in single MCDData system

7.17.4.3.1 General

The initiation of Ad hoc group SDS session results in ad hoc group participants exchanging SDS data.

7.17.4.3.2 Procedure

The procedure in figure 7.17.4.3.2-1 describes the case where an MCDData user is initiating SDS data communication session with an MCDData ad hoc group for exchanging SDS data transactions between the ad hoc group participants, with or without disposition request.

Pre-conditions:

- 1. As defined in the subclause 7.17.3.1.1.

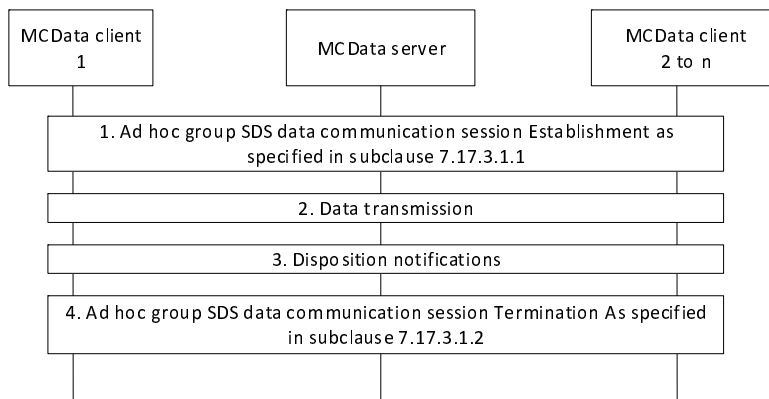


Figure 7.17.4.3.2-1: Ad hoc group SDS data communication session

- 1. User at MCDData client 1 initiate an ad hoc group data communication as specified in the subclause 7.17.3.1.1.

2. MCDData client 1 and the ad hoc group data session request accepted clients have successfully established media plane for data communication and either MCDData client can transmit SDS data. The MCDData data request may contain disposition request if indicated by the client sending data. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the SDS data receiving MCDData users may be notified, otherwise those MCDData users shall not be notified.
3. If MCDData data disposition was requested by the user, then the SDS data receiving MCDData client initiates a MCDData data disposition notification for delivery, read reports to the disposition requesting user. The MCDData data disposition notification from the receiving MCDData clients may be stored by the MCDData server for disposition history interrogation from authorized users.
4. Based on the MCDData user action or conditions to release, the established media plane for SDS data exchange is released as specified in the subclause 7.17.3.1.2.

7.17.4.4 Ad hoc group short data service data communication procedures involving multiple MC systems

7.17.4.4.1 General

The initiation of Ad hoc group SDS session results in ad hoc group participants exchanging SDS data.

7.17.4.4.2 Procedure

The procedure in figure 7.17.4.4.2-1 describes the case where an MCDData user is initiating SDS data communication session with an MCDData ad hoc group for exchanging SDS data transactions between the ad hoc group participants, with or without disposition request.

Pre-conditions:

1. As defined in the Common Ad hoc group data communication procedures of subclause 7.17.3.2.1 or subclause 7.17.3.2.3.

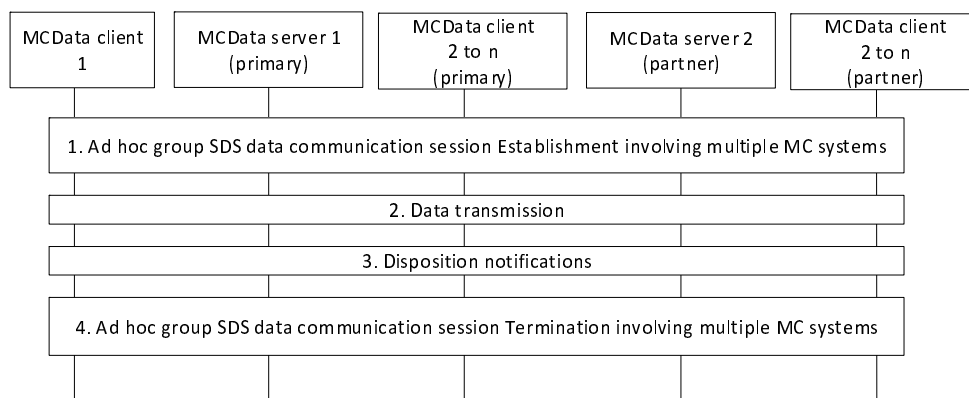


Figure 7.17.4.4.2-1: Ad hoc group SDS data communication session

1. User at MCDData client 1 initiate an ad hoc group data communication as specified in the subclause 7.17.3.2.1 or subclause 7.17.3.2.3.
2. MCDData client 1 and the ad hoc group data session request accepted clients have successfully established media plane for data communication and either MCDData client can transmit SDS data. The MCDData data request may contain disposition request if indicated by the client sending data. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the SDS data receiving MCDData users may be notified, otherwise those MCDData users shall not be notified.
3. If MCDData data disposition was requested by the user, then the SDS data receiving MCDData client initiates a MCDData data disposition notification for delivery, read reports to the disposition requesting user. The MCDData data disposition notification from the receiving MCDData clients may be stored by the MCDData server for disposition history interrogation from authorized users.

4. Based on the MCDData user action or conditions to release, the established media plane for SDS data exchange is released as specified in the subclause 7.17.3.2.2 or subclause 7.17.3.2.5.

7.17.5 Ad hoc group file distribution communication procedures

7.17.5.1 General

This subclause contains procedures for ad hoc group file distribution communication across a single MCDData system, and uses the common procedures defined in the subclause 7.17.3 in conjunction with the procedures defined in this subclause. Other common procedures specified in the 7.17.3 are used at any time after Ad hoc group file distribution communication establishment based on the need of it.

7.17.5.2 Information flows for file distribution specific

Table 7.17.5.2-1 describes the information elements that are specific to file distribution and are used along with the common information flows defined in the subclause 7.17.2 for the Ad hoc group short data service data communication. These information elements are included when an Ad hoc group data session request sent from the MCDData client to the MCDData server, between the MCDData servers, and from the MCDData server to the MCDData client.

Table 7.17.5.2-1: file distribution specific

| Information element | Status | Description |
|--------------------------------|--------|--|
| Conversation Identifier | M | Identifies the conversation |
| Transaction Identifier | M | Identifies the MCDData transaction |
| Reply Identifier | O | Identifies the original MCDData 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 |

7.17.5.3 Ad hoc group file distribution communication procedures in single MCDData system

7.17.5.3.1 General

The initiation of Ad hoc group standalone FD using media plane results in ad hoc group participants exchanging SDS data.

7.17.5.3.2 Procedure

The procedure in figure 7.17.5.3.2-1 describes the case where an MCDData user is initiating ad hoc group standalone data communication for sending file to multiple MCDData users, with or without download completed report request.

Pre-conditions:

1. As defined in the Common Ad hoc group data communication procedures of subclause 7.17.3.1.1.

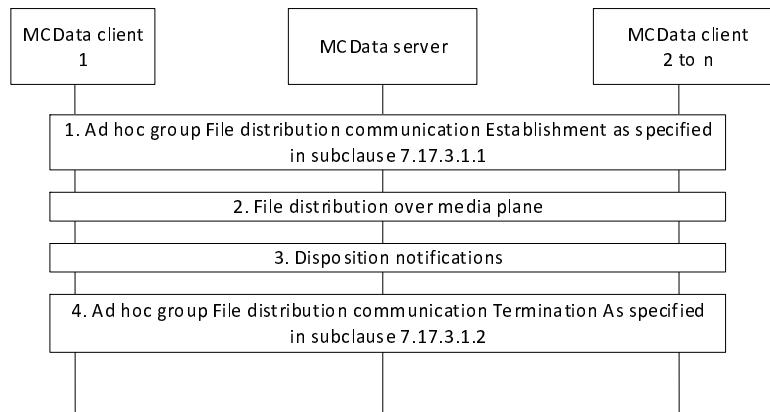


Figure 7.17.5.3.2-1: Ad hoc group SDS data communication session

1. User at MCDATA client 1 initiate an ad hoc group data communication as specified in the subclause 7.17.3.1.1.
2. MCDATA client 1 and MCDATA server have successfully established media plane for file transmission and the MCDATA client 1 transmits the file data. 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).
3. The dispositions notifications are handled as specified in the subclause 7.5.2.7.
4. Based on the MCDATA user action or conditions to release, the established media plane for FD communication is released as specified in the subclause 7.17.3.1.2.

7.17.5.4 Ad hoc group file distribution communication procedures involving multiple MC systems

7.17.5.4.1 General

The initiation of Ad hoc group standalone FD using media plane results in ad hoc group participants exchanging FD data.

7.17.5.4.2 Procedure

The procedure in figure 7.17.5.4.2-1 describes the case where an MCDATA user is initiating ad hoc group standalone data communication for sending file to multiple MCDATA users, with or without download completed report request.

Pre-conditions:

1. As defined in the Common Ad hoc group data communication procedures of subclause 7.17.3.2.1 or subclause 7.17.3.2.3.

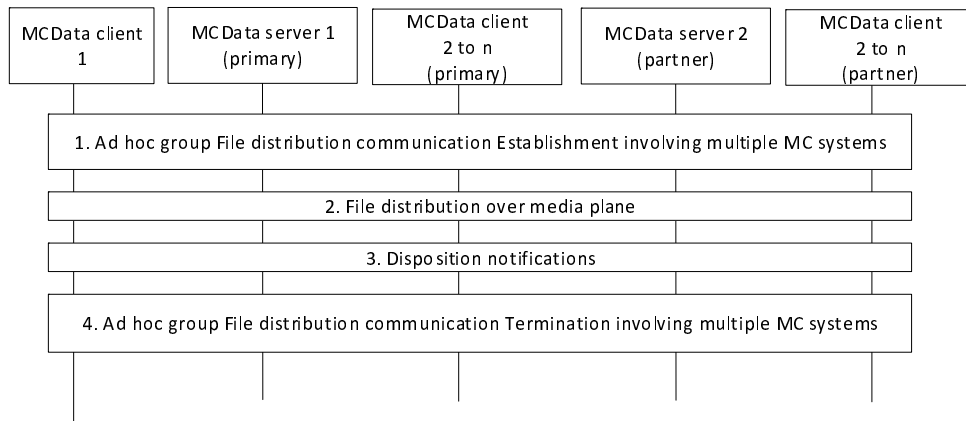


Figure 7.17.5.4.2-1: Ad hoc group FD data communication session

1. User at MCDATA client 1 initiate an ad hoc group data communication as specified in the subclause 7.17.3.2.1 or subclause 7.17.3.2.3.
2. MCDATA client 1 and MCDATA server have successfully established media plane for file transmission and the MCDATA client 1 transmits the file data. 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).
3. The dispositions notifications are handled as specified in the subclause 7.5.2.7.
4. Based on the MCDATA user action or conditions to release, the established media plane for FD communication is released as specified in the subclause 7.17.3.2.2 or subclause 7.17.3.2.5.

Annex A (normative): MCDData related configuration data

A.1 General

This Annex provides information about the static data needed for configuration for the MCDData service, which belongs to one of the following categories:

- MCDData UE configuration data (see subclause A.2);
- MCDData user profile configuration data (see subclause A.3);
- MCDData related group configuration data (see subclause A.4); and
- MCDData 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 MCDData UE, MCDData group, MCDData user and MCDData service configuration data refers to the information that will be stored against each MCDData UE, MCDData group, MCDData user and MCDData 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 MCDData UE shall always overwrite previous configuration data, irrespective of whether the configuration data was provided via the online or offline mechanism.

A.2 MCDData 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 MCDData UE after MCDData 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 MCDData 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 MCDData groups and their relay service code (as specified in 3GPP TS 23.303 [7]) (optional) (see NOTE) |
| | > MCDData 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 MCDData user profile configuration data

The general aspects of MC service user profile configuration data are specified in 3GPP TS 23.280 [5]. The MCDData user profile configuration data is stored in the MCDData user database. The MCDData server obtains the MCDData user profile configuration data from the MCDData user database (MCDData-2).

Tables A.3-1 and A.3-2 contain the MCDData user profile configuration required to support the use of on-network MCDData service. Tables A.3-1 and A.3-3 contain the MCDData user profile configuration required to support the use of off-network MCDData 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: MCDData user profile configuration data (on and off network)

| Reference | Parameter description | MCDData UE | MCDData Server | Configuration management server | MCDData user database |
|---|--|------------|----------------|---------------------------------|-----------------------|
| Subclause 8.1.2 of 3GPP TS 23.280 [5] | MCDData identity (MCDData ID) | Y | Y | Y | Y |
| 3GPP TS 33.180 [13] | KMSUri for security domain of MCDData ID (see NOTE 1) | Y | Y | Y | Y |
| Subclause 5.2.4 of 3GPP TS 23.280 [5] | Pre-selected MCDData user profile indication (see NOTE 2) | Y | Y | Y | Y |
| Subclause 5.2.4 of 3GPP TS 23.280 [5] | MCDData user profile index | Y | Y | Y | Y |
| Subclause 5.2.4 of 3GPP TS 23.280 [5] | MCDData 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 MCDData 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 MCDData emergency alert | Y | Y | Y | Y |
| [R-5.6.2.4.1-013] of 3GPP TS 22.280 [17] | Automatically trigger a MCDData emergency communication after initiating the MCDData 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 MCDData 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 MCDData emergency private communication (see NOTE 3) | | | | |
| | > MCDData ID | Y | Y | Y | Y |
| 3GPP TS 33.180 [19] | > KMSUri for security domain of MCDData 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 MCDData emergency alert | Y | Y | Y | Y |
| [R-6.15.6.2-002] of 3GPP TS 22.280 [2] | Authorised to activate an MCDData ad hoc group emergency alert | Y | Y | Y | Y |

| | | | | | |
|---|---|---|---|---|---|
| [R-6.15.6.2-006] of 3GPP TS 22.280 [2] | Authorisation to cancel an MCDData ad hoc group emergency alert | Y | Y | Y | Y |
| [R-6.15.6.2-007] of 3GPP TS 22.280 [2] | Authorised to set up an MCDData group communication using the ad hoc group used for the alert | Y | Y | Y | Y |
| | Authorised to receive the participants information of an MCDData ad hoc group emergency alert | N | 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 MCDData users this MCDData user is authorized to initiate a one-to-one communication | | | | |
| | >> MCDData 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 MCDData 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 MCDData user(s) this MCDData 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 MCDData users this MCDData user is allowed to cancel distribution of files being sent or waiting to be sent | | | | |
| | >> MCDData ID | Y | Y | Y | Y |
| | >> KMSUri for security domain of MCDData 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 MCDData 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 MCDData 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 MCDData 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 MCDData users this MCDData user is allowed to request the release of an ongoing transmission that this MCDData user is participating in | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | >> MCDData 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 |
| [R-6.12-003] of 3GPP TS 22.280 [17] | Authorised to restrict the dissemination of the location information | Y | Y | Y | Y |
| Subclause 10.9 of 3GPP TS 23.280 [5] | Authorised to request location information of another user in the primary MCDData system (see NOTE 7) | Y | Y | Y | Y |
| Subclause 10.9 of 3GPP TS 23.280 [5] | List of partner MCDData systems for which user is authorised to request location information for another user | | | | |
| | > Identity of partner MCDData system | Y | Y | Y | Y |
| <p>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].</p> <p>NOTE 2: As specified in 3GPP TS 23.280 [5], for each MCDData user's set of MCDData user profiles, only one MCDData user profile shall be indicated as being the pre-selected MCDData user profile.</p> <p>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 MCDData user's currently selected group will be used.</p> <p>NOTE 4: The use of the parameter is left to implementation.</p> <p>NOTE 5: This is the top-level control parameter to determine whether MCDData communications will be stored or not. When this parameter is set; the second level control parameter is used to determine whether a specific MCDData communication (private or which group) will be stored and MCDData user can request for all or selected of his/her MCDData communication shall be stored in the MCDData message store or not.</p> <p>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.</p> <p>NOTE 7: Further differentiation on authorisation for requesting location information based on detailed characteristics (e.g. MC organization, MC service ID, functional alias) is left to implementation.</p> | | | | | |

Table A.3-2: MCDData user profile configuration data (on network)

| Reference | Parameter description | MCDData UE | MCDData Server | Configuration management server | MCDData 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 MCDData groups for use by an MCDData user | | | | |
| | > MCDData 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 MCDData user is permitted to transmit data in the group | Y | Y | Y | Y |
| | >> Maximum amount of data that the MCDData user can transmit in a single request during group communication | Y | Y | Y | Y |
| | >> Maximum amount of time that the MCDData 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 MCDData service authorization for the user | | | | |
| | > MCDData Group ID | Y | Y | Y | Y |
| [R-6.4.2-006] of 3GPP TS 22.280 [2] | Authorisation of an MCDData user to request a list of which MCDData 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 MCDData users that MCDData user is authorised to obtain presence of | | | | |
| | > MCDData 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 MCDData UE of any user | | Y | Y | Y |
| [R-6.13.4-001] of 3GPP TS 22.280 [2] | Authorisation for an MCDData user to enable/disable an MCDData 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 MCDData 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 MCDData users whose selected groups are authorized to be remotely changed | | | | |
| | > MCDData ID | Y | Y | Y | Y |
| [R-6.7.3-007a] of 3GPP TS 22.280 [2] and 3GPP TS 33.180 [13] | List of MCDData users this MCDData user is authorized to receive a one-to-one communication | | | | |

| | | | | | |
|--|--|---|---|---|---|
| | > MCDData ID | Y | Y | Y | Y |
| | > KMSUri for security domain of MCDData ID | Y | Y | Y | Y |
| | Conversation management | | | | |
| [R-6.1.1.2-009] of 3GPP TS 22.282 [3]. | > List of MCDData users to be sent message delivered disposition notifications in addition to the message sender | N | Y | Y | Y |
| | >> MCDData ID | N | Y | Y | Y |
| [R-6.1.1.2-009] of 3GPP TS 22.282 [3]. | > List of MCDData users to be sent message read disposition notifications in addition to the message sender | N | Y | Y | Y |
| | >> MCDData 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 | | | | |
| | > MCDData content server where the HTTP FD file is uploaded | | | | |
| | >> Server URI | Y | Y | Y | Y |
| | > MCDData 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 MCDData systems in which this profile is valid for use during migration | | | | |
| Subclause 5.2.9 of 3GPP TS 23.280 [16] | > Identity of partner MCDData system | Y | Y | Y | Y |
| Subclause 10.1.1 of 3GPP TS 23.280 [16] | > Access information for partner MCDData 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 MCDData 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 | | | | |
| | > MCDData 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 | | | | |
| | > MCDData 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 MCDData 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 MCDData 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 MCDData server (see NOTE 8) | N | Y | Y | Y |
| [R-5.9a-019] of 3GPP TS 22.280 [2] | >> Trigger criteria for activation by the MCDData 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 MCDData 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 MCDData 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 MCDData users which can be included in IP connectivity sessions. | | | | |
| | >> MCDData ID | Y | Y | Y | Y |
| 3GPP TS 33.180 [13] | >> KMSUri for security domain of the MCDData 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 MCDData users which can be addressed in a remote initiated IP connectivity session; | | | | |
| | >> MCDData 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 MCDData users which can be addressed in a remote initiated IP connectivity session tear down; | | | | |
| | >> MCDData 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 MCDData 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 MCDData service authorizations for this user (see NOTE 10) | N | Y | Y | Y |
| | ad hoc group data communication authorizations | | | | |
| [R-6.15.5.3-001] of 3GPP TS 22.280 [2] | > Authorised to initiate ad hoc group data communication | Y | Y | Y | Y |
| R-6.15.5.3-003] of 3GPP TS 22.280 [2] | > Authorised to participate in ad hoc group data communication | Y | Y | Y | Y |
| | > Authorised to initiate emergency ad hoc group data communication | Y | Y | Y | Y |

| | | | | | |
|--|--|---|---|---|---|
| | > Authorised to initiate imminent peril ad hoc group data communication | Y | Y | Y | Y |
| | > Authorised to receive the participants information of an ad hoc group communication | N | Y | Y | Y |
| | > Authorised to modify the list of participants for an ad hoc group data communication | Y | Y | Y | Y |
| <p>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].</p> <p>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].</p> <p>NOTE 3: The use of this parameter by the MCDData UE is outside the scope of the present document.</p> <p>NOTE 4: The LMR key management functional entity is part of the LMR system and is outside the scope of the present document.</p> <p>NOTE 5: This is an LMR specific parameter with no meaning within MC services.</p> <p>NOTE 6: Access information for each partner MCDData system comprises the list of information required for initial UE configuration to access an MCDData system, as defined in table A.6-1 of 3GPP TS 23.280 [16]</p> <p>NOTE 7: The criteria may consist conditions such as the location of the MCDData user or the active functional alias of the MCDData user.</p> <p>NOTE 8: The criteria may consist of conditions such as MCDData user location or time.</p> <p>NOTE 9: IP information may contain IP addresses, corresponding subnet masks, gateway and DNS settings.</p> <p>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.</p> <p>NOTE 11: This is the second level control parameter to determine whether this group communication will be stored in the MCDData message store when the Store communication in Message Store top level control parameter is set.</p> | | | | | |

Table A.3-3: MCDData user profile configuration data (off network)

| Reference | Parameter description | MCDData UE | MCDData Server | Configuration management server | MCDData user database |
|---|---|------------|----------------|---------------------------------|-----------------------|
| [R-7.2-003], [R-7.6-004] of 3GPP TS 22.280 [2] | List of off-network MCDData groups for use by this MCDData user | | | | |
| | > MCDData 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 |
| <p>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].</p> <p>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].</p> <p>NOTE 3: The use of this parameter by the MCDData UE is outside the scope of the present document.</p> <p>NOTE 4: This is the second level control parameter to determine whether this group communication will be stored in the MCDData message store when the Store communication in Message Store top level control parameter is set.</p> | | | | | |

A.4 MCDData 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 "MCDData 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 "MCDData 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 "MCDData 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 | MCDData UE | MCDData 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 | >> MCDData 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 | MCDData UE | MCDData 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 MCDData group | Y | N | Y |
| 3GPP TS 23.283 [18] | >> LMR specific identity for MCDData 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 | MCDData UE | MCDData 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 | | | |
| | >>> MCDData group call signalling | Y | N | Y |
| | >>> MCDData group call media | Y | N | Y |

A.5 MCDData service configuration data

The general aspects of MC service configuration are specified in 3GPP TS 23.280 [5]. The MCDData service configuration data is stored in the MCDData server.

Tables A.5-1 and A.5-2 describe the configuration data required to support the use of on-network MCDData service. Tables A.5-1 and A.5-3 describe the configuration data required to support the use of off-network MCDData 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: MCDData service configuration data (on and off network)

| Reference | Parameter description | MCDData UE | MCDData Server | Configuration management server |
|-----------|-----------------------|------------|----------------|---------------------------------|
|-----------|-----------------------|------------|----------------|---------------------------------|

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

| Reference | Parameter description | MCDData UE | MCDData 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] | >>> MCDData 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 |
| | MCDData notification server | | | |
| | > Server URI(s) | Y | Y | Y |
| | Ad hoc group data communication configurations | | | |
| [R-6.15.5.3-005] of 3GPP TS 22.280 [2] | > Support of ad hoc group data communication (enabled/disabled) (see NOTE 3) | Y | Y | Y |
| [R-6.15.5.3-002] of 3GPP TS 22.280 [2] | > Maximum number of participants allowed to participate in an ad hoc group data communication | Y | Y | Y |
| [R-6.15.5.3-004] of 3GPP TS 22.280 [2] | > Hang timer for ad hoc group data communication | N | Y | Y |
| | > Maximum duration for ad hoc group data communication | Y | Y | Y |
| | > List of preferred media codecs for ad hoc group data communication | 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 MCDData server is up to implementation. | | | | |
| NOTE 3: If the support for ad hoc group data communication is disabled by the MC system then all other configurations related to ad hoc group data communication are not applicable | | | | |

Table A.5-3: MCDData service configuration data (off network)

| Reference | Parameter description | MCDData UE | MCDData 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 | | | |
| | > MCDData one-to-one call signalling | Y | N | Y |
| | > MCDData one-to-one call media | Y | N | Y |

Annex B (informative): Transmission control for MCDData

B.1 Overview of transmission control process

The MCDData 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 MCDData 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.

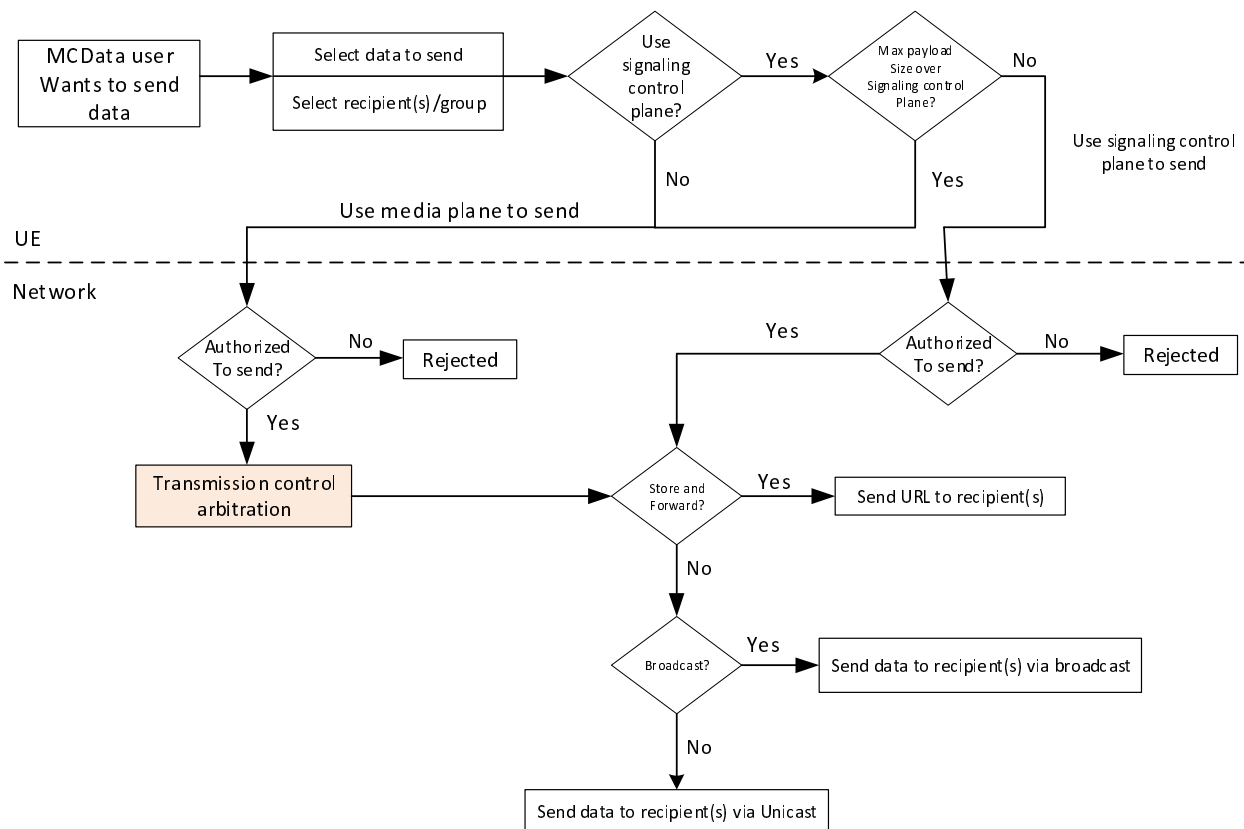


Figure B.1-1: Transmission control process

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 MCDData 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 MCDData user.

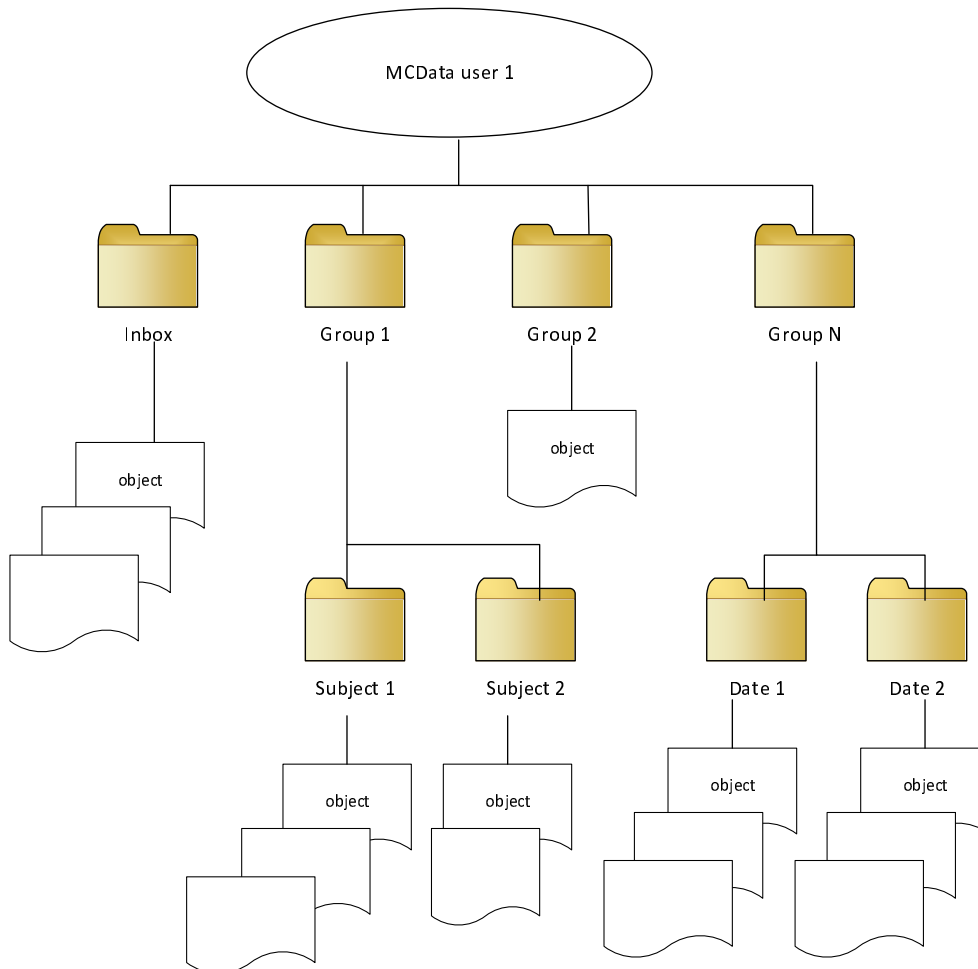


Figure D-1: User message storage area example

In figure D-1 the MCDData user 1 message storage area in the MCDData 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 MCDData 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 MCDData user 1 can then move all the objects related to Group 1 communication from the Inbox to the Group 1 folder. The MCDData 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 MCDData 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 MCDData user 1 can browse his user account in the MCDData message store interactively and navigate to the information he would like to see. For example, the MCDData 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 | MCDData 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 | MCDData 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 MCDData ID | 14.1.0 |
| 2017-03 | SA#75 | SP-170071 | 0035 | | F | Addition of definition for MCDData 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 MCDData 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 Architecture requirements | 14.2.0 |
| 2017-06 | SA#76 | SP-170392 | 0051 | 1 | F | Clarifications to section 6.5.1 that SDS Distribution function in MCDData server talks to SDS function in MCDData 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 MCDData 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 MCDData 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 MCDData 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 MCDData 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 MCDData Group SDS | 15.3.0 |
| 2018-06 | SA#80 | SP-180367 | 0109 | | A | Clarification for presentation priority in MCDData UE configuration | 15.4.0 |
| 2018-06 | SA#80 | SP-180370 | 0110 | 3 | A | Modify MCDData download data response | 15.4.0 |
| 2018-09 | SA#81 | SP-180677 | 0111 | 2 | C | Media storage function in the MCDData 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 MCDData communication using HTTP" procedures | 16.1.0 |
| 2018-12 | SA#82 | SP-181178 | 0120 | 1 | F | Alignment with the MCDData 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 MCDData message store operations | 16.1.0 |
| 2018-12 | SA#82 | SP-181178 | 0123 | 1 | F | Correct misalignment on MCDData user usage | 16.1.0 |
| 2019-03 | SA#83 | SP-190074 | 0124 | - | F | Correct the location of MCDData content server and MCDData 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 MCDData | 16.2.0 |
| 2019-03 | SA#83 | SP-190074 | 0126 | 2 | B | Additional architecture requirement for MCDData message store | 16.2.0 |
| 2019-03 | SA#83 | SP-190074 | 0127 | 2 | B | Generic SDS procedure with MCDData message store | 16.2.0 |
| 2019-03 | SA#83 | SP-190074 | 0128 | 3 | B | Providing data for a user entering an ongoing MCDData group conversation | 16.2.0 |

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| 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 |
| 2019-06 | SA#84 | SP-190486 | 0138 | 2 | B | Interconnection for file distribution | 16.3.0 |
| 2019-06 | SA#84 | SP-190486 | 0139 | 1 | B | Interconnection and migration with message store | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0140 | 2 | B | User configuration for functional alias information query for MCDATA | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0141 | 1 | B | User requested priority in 23.281 | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0142 | 3 | B | Criteria based automatic group affiliation and deaffiliation | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0143 | 2 | B | MCDATA configuration for functional alias | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0144 | 4 | B | Functional alias support configuration items | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0145 | 3 | B | Functional alias supplements for the MCDATA transmission and reception control procedures | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0147 | 2 | B | Functional alias support for Short Data Service (SDS) | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0148 | 3 | B | MC Data User IP connectivity service capability– part 1 Functional Architecture | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0149 | 1 | C | MCDATA transport capabilities for IP connectivity service | 16.3.0 |
| 2019-06 | SA#84 | SP-190485 | 0150 | 6 | B | MCDATA File Distribution using the MBMS download delivery method | 16.3.0 |
| 2019-06 | SA#84 | SP-190485 | 0151 | - | C | Remove the procedure in 7.5.2.9 File removal using HTTP by MCDATA server | 16.3.0 |
| 2019-06 | SA#84 | SP-190485 | 0152 | 2 | F | Remove the duplicated MCDATA server URI in UE configuration table | 16.3.0 |
| 2019-06 | SA#84 | SP-190485 | 0153 | 3 | F | Add lossless communication to network group configuration and fix missing configuration parameter | 16.3.0 |
| 2019-06 | SA#84 | SP-190485 | 0154 | 2 | F | Resolution proposals for some Editor's Notes | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0155 | | B | MCDATA client performs automatic activation and deactivation of functional aliases based on location | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0156 | | B | MCDATA server limits the number of simultaneous successful service authorisations | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0157 | 3 | B | Functional alias support for MCDATA File Distribution | 16.3.0 |
| 2019-06 | SA#84 | SP-190488 | 0159 | 3 | B | MC Data User IP connectivity service capability– part 2 IP connectivity for Point-to-Point and Group communication | 16.3.0 |
| 2019-09 | SA#85 | SP-190729 | 0161 | 3 | F | Correct the configuration parameters for the MCDATA emergency alert procedures | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0169 | 1 | F | Fix omission of location services in MCDATA | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0170 | 2 | B | EPS bearer for emergency | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0171 | 2 | B | Emergency support for one-to-one SDS | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0172 | 2 | B | Emergency and imminent peril support for group SDS | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0173 | 2 | B | Emergency support for off-network SDS | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0174 | 2 | C | Addition of Location information to SDS and Enhance Status | 16.4.0 |
| 2019-09 | SA#85 | SP-190732 | 0177 | 1 | F | Fixing the user profile configuration data for criteria triggered functional alias activation and de-activation | 16.4.0 |
| 2019-09 | SA#85 | SP-190732 | 0178 | | F | Stage 1 requirement reference correction in the user profile data | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0179 | 2 | F | Clarification and corrections to support transmission control | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0180 | 2 | F | Corrections to the transmission and reception control procedures | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0183 | 1 | B | One-to-one SDS Session upgrade to emergency session | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0184 | 1 | B | Group SDS Session upgrade to emergency/imminent-peril session and cancel in-progress emergency/imminent-peril group state | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0185 | 2 | B | One-to-One Emergency MCDATA FD | 16.4.0 |

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| 2019-09 | SA#85 | SP-190729 | 0186 | 1 | B | Group emergency MCDData FD | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0187 | 1 | B | One-to-one FD Session upgrade to emergency session | 16.4.0 |
| 2019-09 | SA#85 | SP-190729 | 0188 | 1 | B | Group FD communication upgrade to emergency/imminent-peril communication and cancel in-progress emergency/imminent-peril group state | 16.4.0 |
| 2019-09 | SA#85 | SP-190735 | 0162 | 2 | B | Point-to-Point IP connectivity using functional alias to address the target MCDData user | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0163 | 2 | B | SDS addressing based on functional alias | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0164 | 4 | B | Remote initiation of Point-to-Point IP connectivity | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0165 | 4 | B | Remote tear down of point-to-point IP connectivity | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0166 | 1 | B | Communication priority for functional aliases | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0181 | 3 | B | File distribution addressing based on functional alias | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0182 | 2 | B | IP connectivity for group communication (unicast) | 17.0.0 |
| 2019-09 | SA#85 | SP-190735 | 0189 | 3 | B | Capability to change remotely the priority of the point-to-point IP connectivity communication | 17.0.0 |
| 2019-12 | SA#86 | SP-191113 | 0190 | 2 | F | Requested Priority in IP connectivity point to point communication | 17.1.0 |
| 2019-12 | SA#86 | SP-191113 | 0191 | 1 | B | Enhancing SDS data requests with application priority capabilities in on-network mode | 17.1.0 |
| 2019-12 | SA#86 | SP-191113 | 0193 | 2 | B | Priority of the user | 17.1.0 |
| 2019-12 | SA#86 | SP-191108 | 0196 | | A | File repair with the content storage function | 17.1.0 |
| 2020-03 | SA#87-E | SP-200113 | 0197 | 2 | A | Correction of internal clause references for Enhanced Status transmission | 17.2.0 |
| 2020-03 | SA#87-E | SP-200117 | 0199 | 2 | C | Corrections and enhancements to IP Connectivity | 17.2.0 |
| 2020-03 | SA#87-E | SP-200113 | 0200 | 2 | A | Enhancements and clarifications for file repair and file delivery using MBMS | 17.2.0 |
| 2020-03 | SA#87-E | SP-200113 | 0201 | 2 | A | Clarification on prepending the MCDData content server URI | 17.2.0 |
| 2020-03 | SA#87-E | SP-200113 | 0202 | 1 | A | Local policies at Partner MCDData system is not applied | 17.2.0 |
| 2020-03 | SA#87-E | SP-200117 | 0208 | 1 | F | Clarifications for MCDData file distribution over MBMS | 17.2.0 |
| 2020-04 | - | - | - | - | - | MCC editorial correction, adding missing line break in clause 6.6.2 | 17.2.1 |
| 2020-07 | SA#88-E | SP-200341 | 0212 | 1 | B | Add the network MCDData notification Server | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0213 | 1 | B | Add new "search folder" and "retrieve folder content" operations | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0214 | | F | Pre-emption of EPS bearers by a new MCDData bearer | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0215 | | F | Miscellaneous small corrections | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0216 | 1 | F | Corrections to the one-to-one SDS information elements | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0217 | 1 | F | Minor editorial corrections | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0218 | | F | Corrections to the one-to-one SDS and FD communication upgrade flows | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0219 | | F | Corrections to the MCDData group standalone FD request information elements | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0220 | | F | Corrections to the group SDS informational elements | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0221 | | F | Corrections to the group FD upgrade and FD in-progress priority state cancel request | 17.3.0 |
| 2020-07 | SA#88-E | SP-200341 | 0222 | | F | MCDData corrections in off-network SDS procedures | 17.3.0 |
| 2020-09 | SA#89-E | SP-200843 | 0226 | 1 | B | Limit the number of simultaneous logins on per user basis | 17.4.0 |
| 2020-09 | SA#89-E | SP-200839 | 0227 | 1 | A | Removal of content reference IE from the FD requests using media plane | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0228 | 1 | F | Functional alias handling for 1-1 FD requests | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0229 | 1 | F | Functional alias handling for one-one session SDS requests | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0230 | 1 | F | Functional alias handling for one-one standalone SDS requests | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0231 | 1 | F | Functional alias handling for IPCon | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0232 | 1 | B | Providing stored files in MCDData content server for FD over MBMS | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0233 | 1 | C | Enhancement of MBMS user service usage procedures | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0234 | 1 | C | Enhancement of Group standalone FD using MBMS | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0236 | 1 | F | MCDData emergency group communication clarifications | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0237 | 1 | F | MCDData one-to-one emergency communication clarifications | 17.4.0 |

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| 2020-09 | SA#89-E | SP-200845 | 0238 | 1 | F | Clarifications on the use of ProSe in off-network MCDData communications | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0239 | 1 | F | Apply transmission and reception control to all FD HTTP procedures consistently | 17.4.0 |
| 2020-09 | SA#89-E | SP-200845 | 0240 | | F | Functional alias handling for 1-1 FD requests using HTTP | 17.4.0 |
| 2020-12 | SA#90-E | SP-200989 | 0242 | 1 | A | Align Annex B with changes to "auto-send" | 17.5.0 |
| 2020-12 | SA#90-E | SP-200989 | 0243 | 2 | A | Correction to the transmission control configuration parameters | 17.5.0 |
| 2020-12 | SA#90-E | SP-200996 | 0246 | | F | Various corrections | 17.5.0 |
| 2020-12 | SA#90-E | SP-200989 | 0248 | | A | IP connectivity, SDS and FD functional model correction | 17.5.0 |
| 2020-12 | SA#90-E | SP-200996 | 0249 | | B | Application specific metadata container | 17.5.0 |
| 2020-12 | SA#90-E | SP-200996 | 0250 | 1 | F | Removal of duplicate MCDData disposition notification information flow | 17.5.0 |
| 2020-12 | SA#90-E | SP-200996 | 0251 | | F | Corrections to FD using procedures and editorials | 17.5.0 |
| 2020-12 | SA#90-E | SP-200996 | 0252 | 1 | B | Depositing file contents distributed via FD communication using HTTP into MCDData message store | 17.5.0 |
| 2020-12 | SA#90-E | SP-200996 | 0253 | 1 | B | Distribution of file residing in MCDData message store account of the MCDData user | 17.5.0 |
| 2021-04 | SA#91-E | SP-210178 | 0255 | 1 | B | Message Store control | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0256 | 1 | F | Corrections to FD using media plane | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0257 | | F | Correction to Deposit an Object procedure | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0258 | | D | Correct typos on information tables | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0259 | 1 | F | Correction and clarification on file upload using HTTP procedure | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0260 | | F | Correction to message names in some procedures | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0261 | 1 | F | Add the IE of Emergency indicator in the message of MCDData FD request | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0263 | 1 | B | Addition of MBMS delivery via MB2 interface for MCDData | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0264 | 1 | F | Corrections to the file distribution using HTTP procedures | 17.6.0 |
| 2021-04 | SA#91-E | SP-210178 | 0265 | 1 | B | MCDData file upload using HTTP including request of network resources with required QoS | 17.6.0 |
| 2021-06 | SA#92-E | SP-210487 | 0263 | 3 | B | Corrections and enhancements to the Notification procedures | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0269 | 2 | F | Aggregated notifications and reports | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0270 | 1 | F | Correct misuse of the term "transmission control" | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0271 | 1 | B | MCDData file download including request of network resources with required QoS | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0272 | 1 | C | Enhancement and corrections to group file distribution using HTTP | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0273 | 1 | C | Enhancement and corrections to one-to-one file distribution using HTTP | 17.7.0 |
| 2021-06 | SA#92-E | SP-210567 | 0274 | 1 | F | Correction to MCDData-5 reference point description | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0275 | 1 | F | EN resolutions in clause 5 | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0276 | 1 | F | EN resolutions in clause 6 | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0277 | 1 | F | EN resolutions in clause 7 | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0278 | 1 | F | EN resolution in B.1 | 17.7.0 |
| 2021-06 | SA#92-E | SP-210487 | 0279 | 2 | F | Proposal on Data Streaming service | 17.7.0 |
| 2021-09 | SA#93-E | SP-210962 | 0281 | | F | Various fixes for 23.282 | 17.8.0 |
| 2021-09 | SA#93-E | SP-210962 | 0282 | | F | Notification URL correction | 17.8.0 |
| 2021-09 | SA#93-E | SP-210962 | 0283 | | F | Clarify the supports of stored and forward functionality | 17.8.0 |
| 2021-09 | SA#93-E | SP-210962 | 0284 | 1 | F | Correction of preconditions and statements related to storing of MCDData communication into Message store | 17.8.0 |
| 2021-09 | SA#93-E | SP-210962 | 0285 | 1 | F | Clarifying the use of deposit file indication IE in MCDData FD request using HTTP | 17.8.0 |
| 2021-09 | SA#93-E | SP-210962 | 0286 | 1 | F | Clarifying the lossless communication | 17.8.0 |
| 2021-12 | SA#94-E | SP-211523 | 0287 | | F | Clarify MCDData service delivery for offline users and delivery notification | 17.9.0 |
| 2021-12 | SA#94-E | SP-211523 | 0288 | 1 | F | Missing information table for the notification message | 17.9.0 |
| 2021-12 | SA#94-E | SP-211523 | 0289 | 2 | F | Disposition Type of specified MCDData users | 17.9.0 |
| 2021-12 | SA#94-E | SP-211523 | 0291 | 1 | F | Clarification on the use of MCDData notification server(s) | 17.9.0 |

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| 2021-12 | SA#94-E | SP-211529 | 0290 | 1 | B | Connection authorisation configuration data | 18.0.0 |
| 2022-06 | SA#96 | SP-220476 | 0294 | | F | Corrections to the use of MC service system | 18.1.0 |
| 2022-06 | SA#96 | SP-220477 | 0295 | 1 | B | Decoupling signalling and media for MCDData service capabilities | 18.1.0 |
| 2022-06 | SA#96 | SP-220476 | 0296 | | B | Allow the user to restrict the dissemination of the location information – MCDData Configuration | 18.1.0 |
| 2022-09 | SA#97-E | SP-220924 | 0297 | 1 | F | MCDData communication to a FA user | 18.2.0 |
| 2022-09 | SA#97-E | SP-220924 | 0298 | 1 | B | Call connect and disconnect over MBMS for MCDData | 18.2.0 |
| 2023-03 | SA#99 | SP-230289 | 0300 | 2 | B | User profile configuration data to support MCDData ad hoc group emergency alerts | 18.3.0 |
| 2023-03 | SA#99 | SP-230287 | 0303 | 2 | C | MCDData user profile configuration parameters for location information | 18.3.0 |
| 2023-03 | SA#99 | SP-230289 | 0304 | 2 | B | Information flows and procedures for the ad hoc group data communication for SDS and FD services of MCDData | 18.3.0 |
| 2023-03 | SA#99 | SP-230289 | 0305 | 1 | B | Description for the terms used in the Ad hoc Group Communication procedures | 18.3.0 |
| 2023-03 | SA#99 | SP-230289 | 0306 | 1 | B | Configuration parameters of Ad hoc group data communication for MCDData | 18.3.0 |
| 2023-06 | SA#100 | SP-230709 | 0307 | 1 | B | Adds user profile data for allowing subsequent MCDData communications after an adhoc group emergency alert | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0308 | 1 | B | Configuration for receiving the adhoc group emergency alert participants list notification (MCDData) | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0309 | 3 | F | Example of MCDData services which are not handled by SIP core | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0310 | | B | Notifying authorized user about adhoc group participants list involving single MC systems - MCDData | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0311 | 2 | B | Information flows and procedures involving multiple systems for the ad hoc group data session in MCDData | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0312 | 2 | F | Corrections for ad hoc group data communication setup | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0313 | 2 | F | Correct MCDData ID usage in information flow table | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0314 | 1 | F | MCDData ad hoc group ID correction | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0315 | 2 | F | Remove unnecessary information flow tables | 18.4.0 |
| 2023-06 | SA#100 | SP-230709 | 0316 | 1 | B | Updates adhoc group call procedures for allowing a subsequent MCDData communication after an adhoc group emergency alert | 18.4.0 |
| 2023-09 | SA#101 | SP-230998 | 0319 | 1 | F | Adding references on group definitions (MCDData) | 18.5.0 |
| 2023-09 | SA#101 | SP-231004 | 0323 | 1 | F | Missing configuration for ad hoc group MCDData communication | 18.5.0 |
| 2023-09 | SA#101 | SP-231004 | 0324 | 1 | F | Missing pre-conditions and steps for ad hoc group MCDData communication | 18.5.0 |
| 2023-12 | SA#102 | SP-231558 | 0330 | 1 | F | Configuration for authorising modification of ad hoc group data communication participants - mcdData | 18.6.0 |
| 2023-12 | SA#102 | SP-231558 | 0335 | 1 | F | Modification of ad hoc group data communication participants involving multiple MCDData systems | 18.6.0 |
| 2023-12 | SA#102 | SP-231558 | 0338 | 1 | F | Correction to modification of ad hoc group data communication participants procedure | 18.6.0 |
| 2024-06 | SA#104 | SP-240758 | 0354 | 1 | F | Removal of GW MC service ID | 18.7.0 |
| 2024-06 | SA#104 | SP-240757 | 0356 | 1 | F | Ambiguity on routing request message | 18.7.0 |
| 2024-06 | SA#104 | SP-240757 | 0359 | 1 | F | IP address(es) of target data host(s) or server(s) | 18.7.0 |
| 2024-09 | SA#105 | SP-241218 | 0362 | 1 | F | Clarification on Message store | 18.8.0 |
| 2024-12 | SA#106 | SP-241218 | 0370 | | F | Corrections to the FD file removal procedures | 18.9.0 |

History

| Document history | | |
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