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Contents

Foreword

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

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1 Scope

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

MCData services suite consists of the following sub-services:

- short data service (SDS);
- file distribution (FD.

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 over LTE".

[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".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mission Critical
Mission Critical Applications
Mission Critical Service
Mission Critical Organization

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

MCData system

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

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

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

Dynamic PCC rule

3.2 Abbreviations

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

DS	Data Streaming
FD	File Distribution
MC	Mission Critical
MCData ID	MCData user identity
PCC	Policy and Charging Control
PCRF	Policy and Charging Rules Function
QCI	QoS Class Identifier
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], 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.

5 Architectural requirements

5.1 Transmission control

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

For MCData types other than SDS, the MCData service invokes a transmission request grant approach before data is permitted to be transmitted. The MCData service provides a configurable limit for the maximum amount of data for FD or time for streamed data that an MCData user can transmit in a single request, which may be configured by the MCData administrator.

Editor's Note: Additional criteria such as frequency of transmission, category/type of data, etc., for transmission control arbitration is FFS.

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

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

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

5.2 Reception control

The MCData service shall support the ability to receive small amounts of data automatically. The MCData service may store data waiting for delivery in a temporary store, and notify availability to the receiving MCData users. 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".

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

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

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

5.3 Short Data Service capability

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

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

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

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

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

5.4 File distribution capability

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

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

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

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

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

5.5 Data streaming capability

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

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

Editor's Note: The minimum bitrate support for data streaming is FFS.

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

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

Editor's Note: The applicability of pause and resume controls to one-to-one communication is FFS

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

5.6 MCData group affiliation and MCData group de-affiliation

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

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

- MCData users receive notifications for participating in MCData sub-services and invitations for their affiliated MCData group(s).

- MCData users select an affiliated MCData group to initiate a new message, file distribution, data stream, etc.

- MCData users receive messages, files, data streams, enhanced status updates, etc, from their affiliated MCData group(s).

5.7 Conversation management

The conversation management:

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

5.8 Bearer management

5.8.1 General

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

5.8.2 EPS bearer considerations

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

5.8.3 EPS unicast bearer considerations for MCData

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

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

5.8.4 MBMS bearer management

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

5.9 Disposition

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

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

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

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.

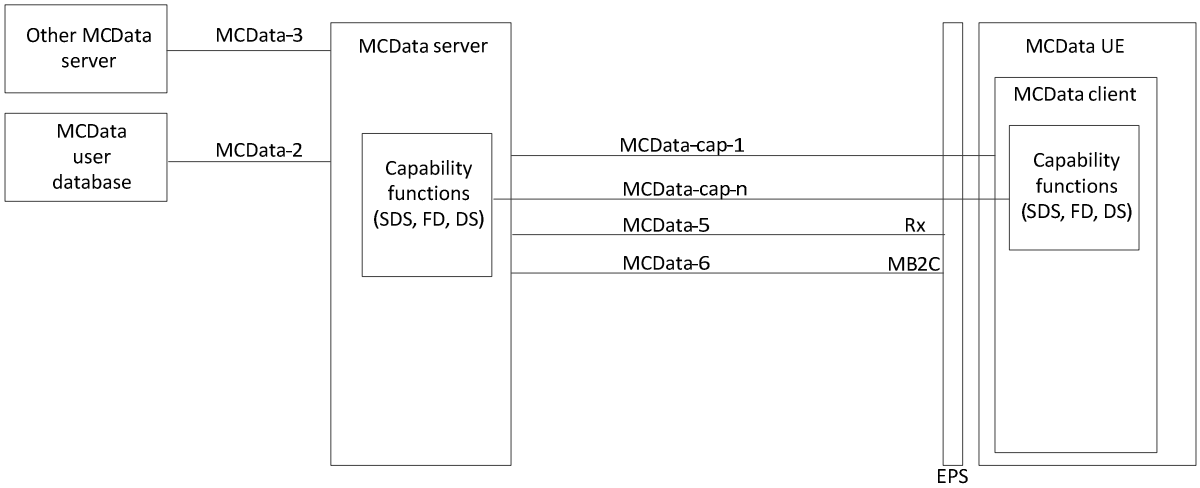

Figure 6.4.1-1: Generic application plane functional model

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

6.4.2 Off-network functional model

6.4.3 Functional entities description

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

6.4.3.1 Application plane

6.4.3.1.1 MCData client

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

6.4.3.1.2 MCData server

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

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

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

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

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

The MCData server performing the controlling role is responsible for:

- handling transmission and reception control (e.g. policy enforcement for participation in the MCData group communication) towards all the MCData users of the one-to-one and group data communication;
- interfacing with the group management server for group policy and affiliation status information of this MCData server's served affiliated users; and
- managing SDS and FD data distribution during MCData group communication.

The MCData server performing the participating role is responsible for:

- handling transmission control (e.g. authorization for participation in the MCData group communication) to MCData users of the one-to-one and group data communication;
- group affiliation support for MCData user, including enforcement of maximum Nc2 number of simultaneous group affiliations by a user;
- interfacing with the group management server for group policy and affiliation status information of this MCData server's served affiliated users;
- relaying the MCData communication messages between the MCData client and the MCData server performing the controlling role; and
- handling reception control (e.g. temporarily storing the data to present to the MCData user as required) to its MCData users of the one-to-one and group data communication.

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

6.4.3.1.3 MCData user database

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

6.4.3.2 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].

6.4.4 Reference points

6.4.4.1 Application plane

6.4.4.1.1 General

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

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

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

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

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

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

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

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

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

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

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

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

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.

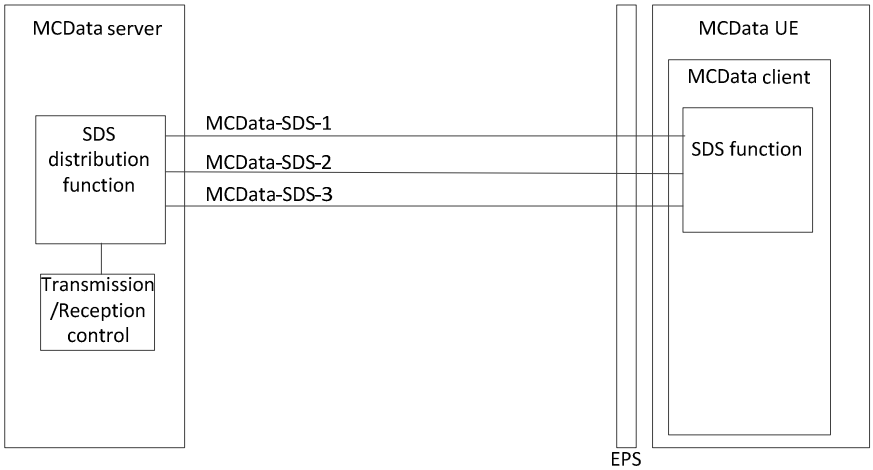

Figure 6.5.1-1: Application plane functional model for SDS

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

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

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

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

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

- information pertaining to applications e.g. health parameters of MCData user for situational awareness application;
- information pertaining to enhanced status service;
- text or URL data between MCData users;
- application data (e.g. health parameters) to the MCData user;
- location information (independent or along with user or application provided data);
- command instructions to invoke certain operations on the MCData UE e.g. invoking UE specific applications; and
- application plane identities for the MCData user and MCData application.

6.5.2 Off-network functional model

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

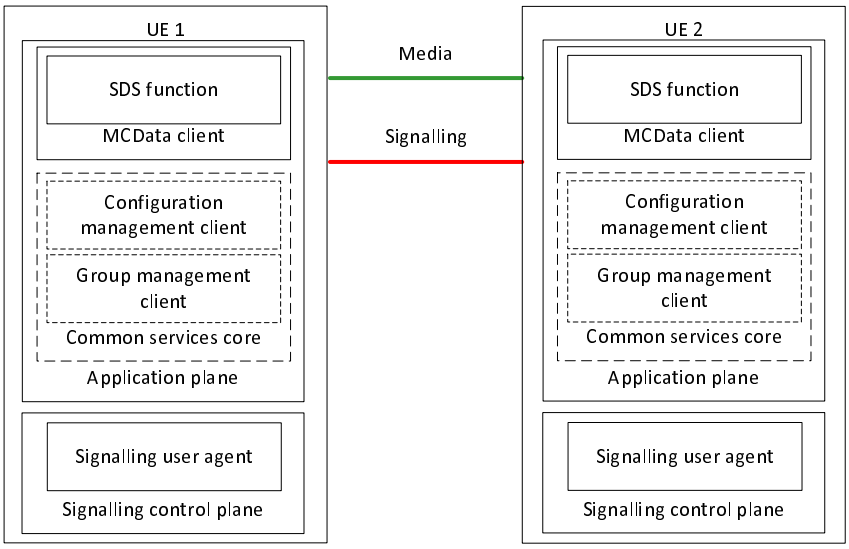

Figure 6.5.2-1: Application plane functional model for SDS

6.5.3 Functional entities description

6.5.3.1 Application plane

6.5.3.1.1 SDS function

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

6.5.3.1.2 SDS distribution function

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

- reception of uplink SDS data transaction by means of the MCData-SDS-1 and MCData-SDS-2 reference points;
- replicate the SDS data as needed for distribution to those MCData communication participants using unicast transport;

- distribute downlink data by IP unicast transmission to those MCData communication participants utilizing unicast transport by means of the MCData-SDS-1 and MCData-SDS-2 reference points; and
- distribute downlink SDS data using multicast downlink transport by means of the MCData-SDS-3 reference point.

6.5.3.1.3 Transmission/Reception control

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

6.5.3.2 Signalling control plane

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

6.5.4 Reference points

6.5.4.1 Application plane

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

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

The MCData-SDS-1 reference point shall use the SIP-1 and SIP-2 reference points for transport and routing of SIP signalling. MCData-SDS-1 reference point is used when the SDS data size does not exceed the capabilities provided by MCData-SDS-1 otherwise MCData-SDS-2 and MCData-SDS-3 may be used appropriately.

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

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

The MCData-SDS-2 reference point, which exists between the SDS distribution function and the SDS function of the MCData client, is used unicast SDS data transaction (when the SDS data size exceeds the capabilities provided by MCData-SDS-1) between the MCData server and the MCData client. The MCData-SDS-2 reference point uses the SGi reference point defined in 3GPP TS 23.002 [10].

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

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

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

6.5.4.2 Signalling control plane

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

6.6 Functional model for file distribution

6.6.1 On-network functional model

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

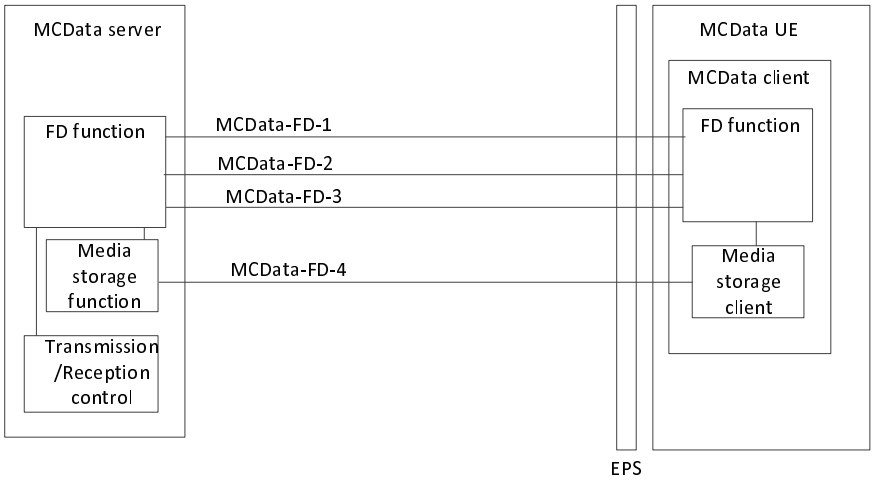

Figure 6.6.1-1: Application plane functional model for file distribution

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

- MCData-FD-1 reference point is used for MCData application signalling for establishing a session in support of MCData file distribution. The bearer is also used for both uplink and downlink unicast data (e.g., URL associated to file, file download completed report).
- MCData-FD-2 reference point carries uplink and downlink unicast file data between the FD functions of the MCData server and the MCData UE.
- MCData-FD-3 reference point carries downlink multicast file data from the FD function of the MCData server to the FD function of the MCData UE.
- MCData-FD-4 reference point carries uplink and downlink unicast file data between the media storage function of the MCData server and the media storage client of the MCData UE.

Editor's Note: Combining MCData-FD-1 and MCData-FD-4 reference points and not showing the media storage client and the media storage function as separate functional entities is FFS.

6.6.2 Off-network functional model

6.6.3 Functional entities description

6.6.3.1 Application plane

6.6.3.1.1 FD function

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

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

- reception of uplink file data by means of the MCData-FD-2 reference point;

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

6.6.3.1.2 Media storage client

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

6.6.3.1.3 Transmission/Reception control

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

6.6.3.1.4 Media storage function

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

6.6.3.2 Signalling control plane

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

6.6.4 Reference points

6.6.4.1 Application plane

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

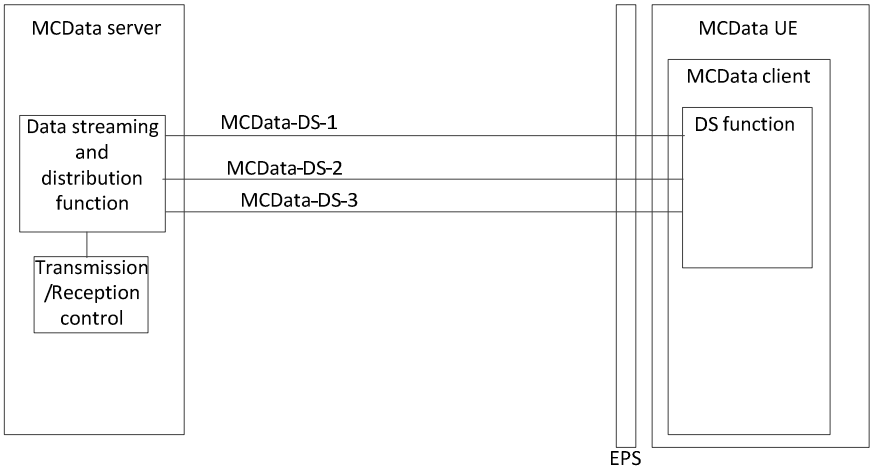

Figure 6.7.1-1: Application plane functional model for data streaming

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

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

6.7.2 Off-network functional model

6.7.3 Functional entities description

6.7.3.1 Application plane

6.7.3.1.1 DS function

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

6.7.3.1.2 Data streaming and distribution function

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

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

6.7.3.1.3 Transmission/Reception control

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

6.7.3.2 Signalling control plane

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

6.7.4 Reference points

6.7.4.1 Application plane

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

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

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

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

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

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

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

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

MCData-DS-2 supports the following functions:

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

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

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

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

6.7.4.2 Signalling control plane

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

6A Identities

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

6B Application of functional model to deployments

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

7 Procedures and information flows

7.1 MCData service configuration

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

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

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

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

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

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

7.3 Use of MBMS transmission (on-network)

7.3.1 Information flows for MBMS Transmission

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

7.3.2 Use of pre-established MBMS bearers

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

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

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

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

Both the media packets as well as the transmission control messages to the receiving users may be sent on the MBMS bearer. Optionally a separate MBMS bearer could be used for the transmission control messages, due to different bearer characteristic requirements.

7.3.3 Use of dynamic MBMS bearer establishment

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

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

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

MCData may use dynamic MBMS bearer for the MCData features 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.

For file distributions the use of dynamic MBMS bearer is not supported.

Both the media packets as well as the transmission control messages to the receiving users may be sent on the MBMS bearer. Optionally a separate MBMS bearer could be used for the transmission control messages, due to different bearer characteristic requirements.

7.3.4 Switching from MBMS bearer to unicast bearer

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

- The MC service client is the MCData client;

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

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

7.4 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 is targeting SDS transaction to another MCData user or MCData group;
- Whether MCData UE is on-network or off-network; and
- Security reasons.

7.4.2 Short data service for on-network

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

7.4.2.1 Information flows for short data service

7.4.2.1.1 MCData standalone data request

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

Table 7.4.2.1.1-1: MCData standalone data request

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
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
Payload	M	SDS content

7.4.2.1.2 MCData data disposition notification

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

Table 7.4.2.1.2-1: MCData data disposition notification

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

7.4.2.1.3 MCData standalone session data request

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

Table 7.4.2.1.3-1: MCData standalone session data request

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
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
SDP offer	M	Media parameters offered

7.4.2.1.4 MCData standalone session data response

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

Table 7.4.2.1.4-1: MCData standalone session data response

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

7.4.2.1.5 MCData session data request

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

Table 7.4.2.1.5-1: MCData session data request

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
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 MCData user consumption
SDP offer	M	Media parameters offered

7.4.2.1.6 MCData session data response

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

Table 7.4.2.1.6-1: MCData session data response

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

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

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition 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
Payload	M	SDS content

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

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
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
Payload	M	SDS content

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

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

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

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

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

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData group ID	M	The MCData group ID to which the data is to be sent
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
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
SDP offer	M	Media parameters offered

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

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData group ID	M	The MCData group ID to which the data is to be sent
MCData ID	M	The identity of the MCData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Transaction type	M	Standalone transaction
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
SDP offer	M	Media parameters offered

7.4.2.1.12 MCData group standalone data response

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

Table 7.4.2.1.12-1: MCData group standalone data response

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

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

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
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
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
SDP offer	M	Media parameters offered

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
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
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
SDP offer	M	Media parameters offered

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

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

7.4.2.2.1 General

A MCData user initiates a standalone SDS data transfer with another MCData user. For the SDS data transfer signalling plane is used.

7.4.2.2.2 Procedure

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

1. The SDS data size is assumed to be within the allowed limits over MCData-SDS-1 using SIP reference points.
2. MCData users on MCData client 1 and MCData client 2 are already registered for receiving MCData service.
3. MCData client 1 and MCData client 2 belong to the same MCData system.

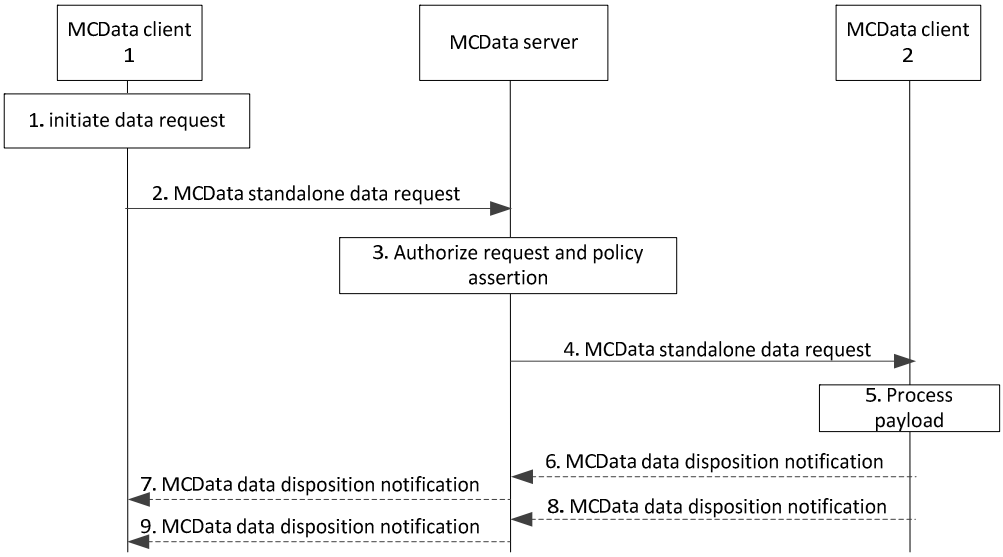

Figure 7.4.2.2.2-1: One-to-one standalone short data service using signalling control plane

1. The user at MCData client 1 initiates an SDS data transfer for the chosen MCData user.

2. MCData client 1 sends a MCData standalone data request towards the MCData server. The MCData standalone data request contains conversation identifier for message thread indication. The MCData standalone data request may contain disposition request if indicated by the user at MCData client 1.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData standalone data request. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege or affiliation.

4. MCData server initiates the MCData standalone data request towards the MCData user.

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

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

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

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

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

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

7.4.2.3.1 General

A MCData user initiates a standalone SDS data transfer with another MCData user. For the SDS data transfer media plane is used.

7.4.2.3.2 Procedure

The procedure in figure 7.4.2.3.2-1 describes the case where an MCData user is initiating one-to-one MCData data communication for sending standalone SDS data to other MCData user, with or without disposition request. Standalone refers to sending unidirectional data in one transaction. The SDS data size is assumed to be above the allowed limits over MCData-SDS-1 interface using SIP reference points.

Pre-conditions:

1. MCData users on MCData client 1 and MCData client 2 are already registered for receiving MCData service.
2. MCData client 1 and MCData client 2 belong to the same MCData system.

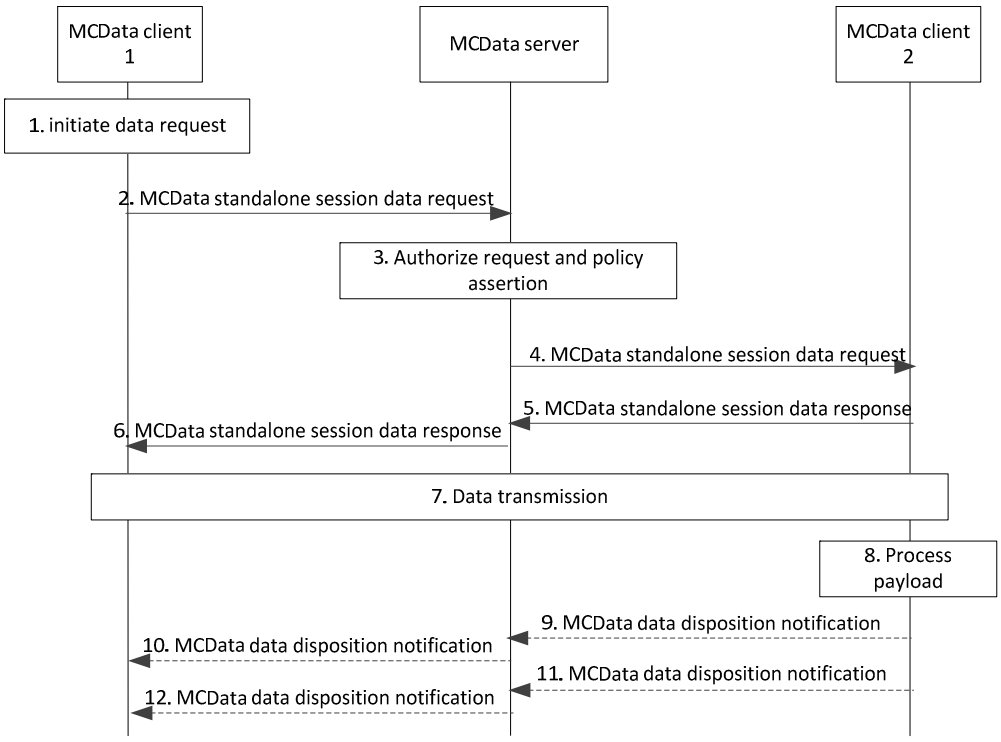

Figure 7.4.2.3.2-1: One-to-one standalone short data service using media plane

1. User at MCData client 1 would like to initiate a SDS data transfer request for the chosen MCData user.
2. MCData client 1 sends a MCData standalone session data request towards the MCData server. The MCData standalone data request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData standalone session data request contains conversation identifier for message thread indication. The MCData data request may contain disposition request if indicated by the user at MCData client 1.
3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData standalone session data request. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCData server determines the eligible MCData user(s) after policy assertion for sending the MCData standalone session data request.

4. MCData server initiates the MCData standalone session data request towards the MCData user.

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

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

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

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

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

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

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

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

7.4.2.4 One-to-one short data service session

7.4.2.4.1 General

A MCData user triggers an establishment of a MCData session with another MCData user for the exchange of SDS data.

7.4.2.4.2 Procedure

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

Pre-conditions:

1. MCData users on MCData client 1 and MCData client 2 are already registered for receiving MCData service.

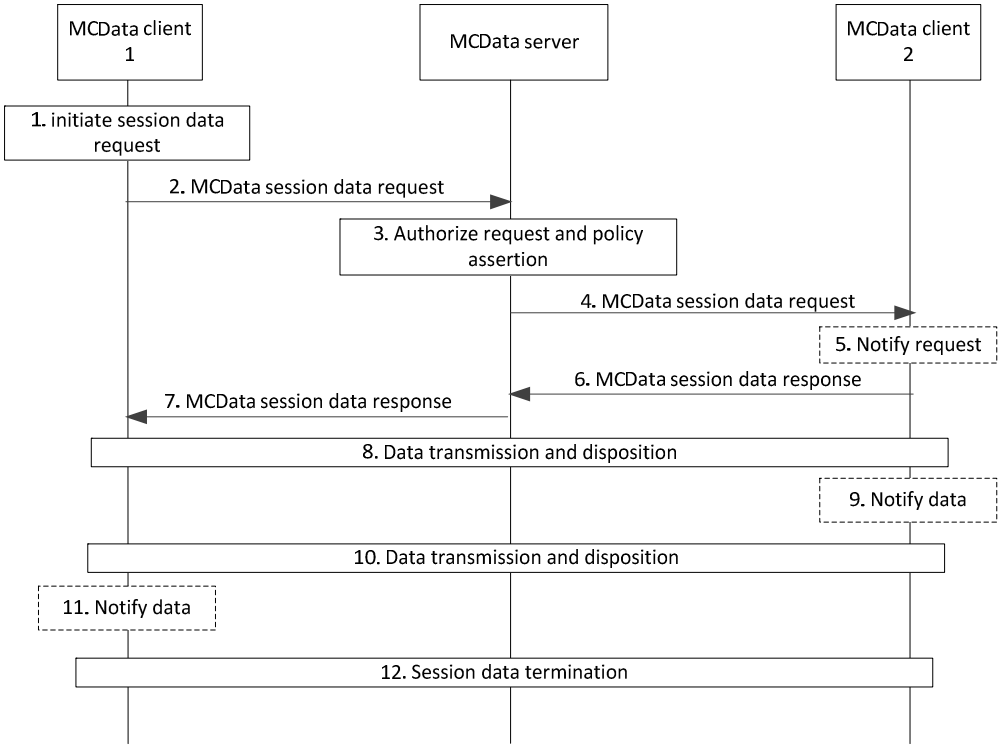

Figure 7.4.2.4.2-1: One-to-one short data service session

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

2. MCData client 1 sends a MCData session data request towards the MCData server. The MCData standalone data request contains one MCData user for one-to-one data communication as selected by the user at MCData client 1. The MCData session data request contains conversation identifier for message thread indication.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData session data request. The MCData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCData server determines the eligible MCData user(s) after policy assertion for sending the MCData session data request.

4. MCData server initiates the MCData session data request towards the MCData user determined.

5. The receiving MCData client 2 optionally notifies the user about the incoming MCData session data request.

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

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

8. and 10. 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.

9. and 11. 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.

12. 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 data size is assumed to be within the allowed limits over MCData-SDS-1 using SIP reference points.

7.4.2.5.2 Procedure

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

Pre-conditions:

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

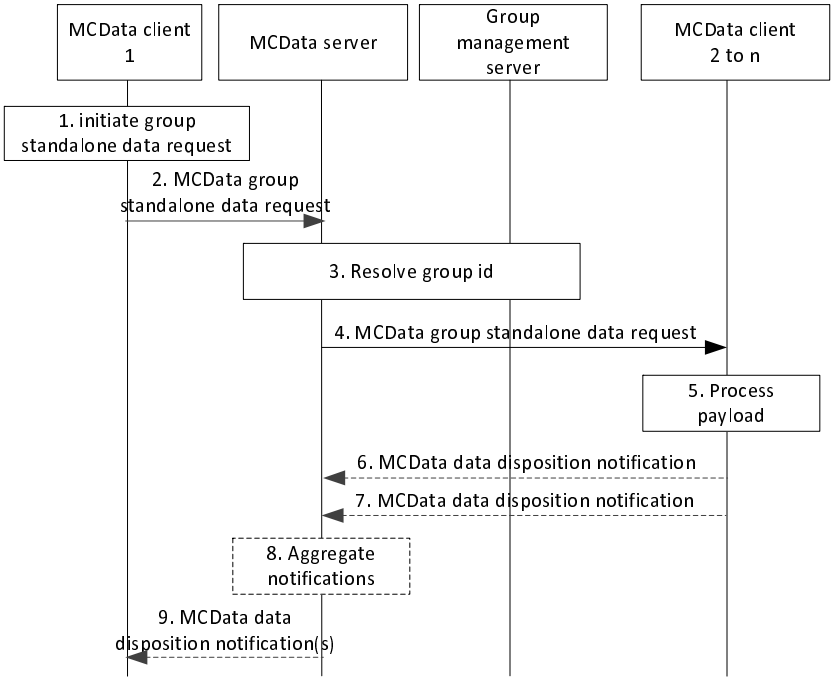

Figure 7.4.2.5.2-1: Group standalone SDS using signalling control plane

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

2. MCData client 1 sends a MCData group standalone data request towards the MCData server. The MCData group data request contains MCData group ID as selected by the user at MCData client 1. The MCData group standalone data request contains conversation identifier for message thread indication. The MCData group standalone data request may contain disposition request if indicated by the user at MCData client 1.

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

4. MCData server initiates the MCData group standalone data request towards each MCData client determined in Step 3.

5. If the payload is for MCData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCData user of MCData clients 2 to n may be notified. Otherwise if the payload is not for MCData user

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

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

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

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

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

7.4.2.6 Group standalone short data service using media plane

7.4.2.6.1 General

The initiation of a group standalone SDS to a selected group results in affiliated group members receiving the SDS data. The SDS data size is assumed to be above the allowed limits over MCData-SDS-1 interface using SIP reference points.

7.4.2.6.2 Procedure

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

Pre-conditions:

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

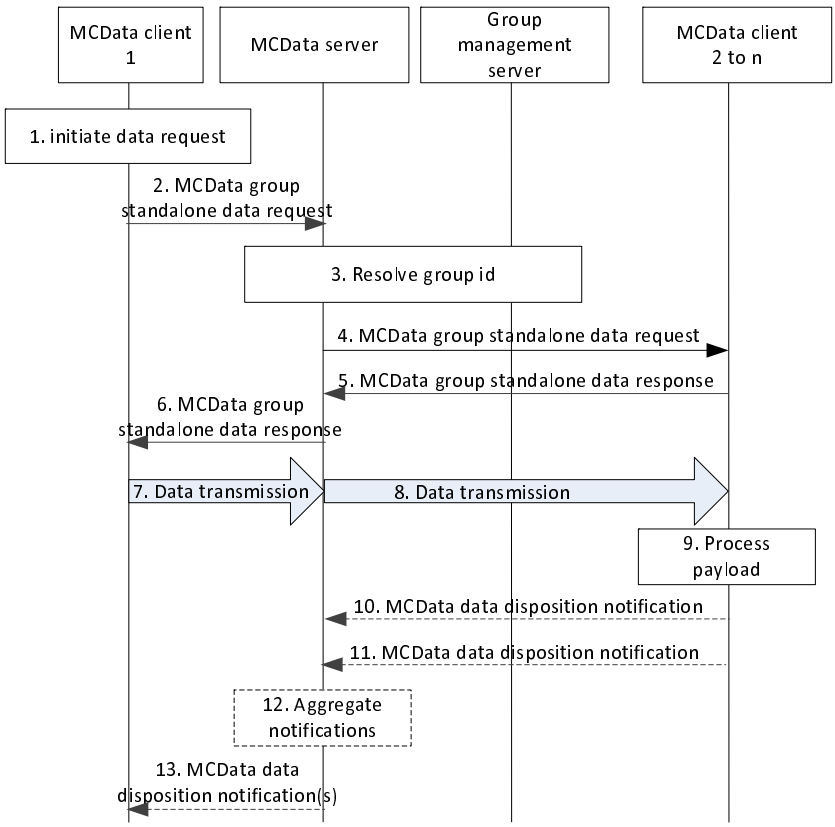

Figure 7.4.2.6.2-1: Group standalone SDS using media plane

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

2. MCData client 1 sends a MCData group standalone data request towards the MCData server. The MCData group standalone data request contains target recipient(s) as selected by the user at MCData client 1. The MCData group standalone data request contains conversation identifier for message thread indication. The MCData group standalone data request may contain disposition request if indicated by the user at MCData client 1.

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

4. MCData server initiates the MCData group standalone data request towards each MCData user determined in Step 3.

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

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

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

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

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

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

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

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

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

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

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

7.4.2.7 Group short data service session

7.4.2.7.1 General

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

7.4.2.7.2 Procedure

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

Pre-conditions:

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

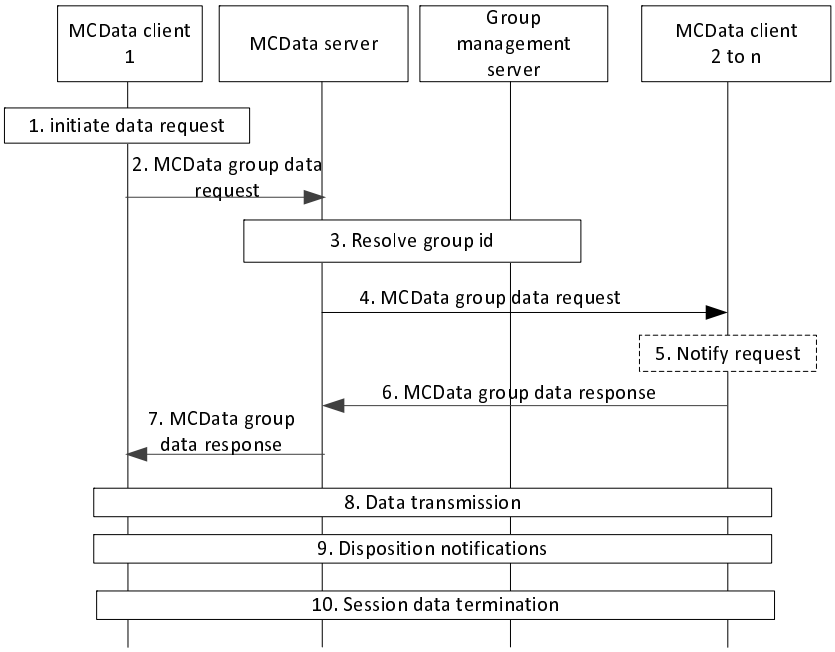

Figure 7.4.2.7.2-1: Group SDS session

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

2. MCData client 1 sends a MCData group data request towards the MCData server. The MCData group data request contains MCData group ID as selected by the user at MCData client 1. The MCData session data request contains conversation identifier for message thread indication.

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

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

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

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

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

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

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

9. If MCData data disposition was requested by the user, then the SDS data receiving MCData client initiates a MCData data disposition notification for delivery, read reports to the disposition requesting user. The MCData

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

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

7.4.3 Short data service for off-network

7.4.3.1 General

7.4.3.2 Information flows for short data service

7.4.3.2.1 MCData standalone data request

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

Table 7.4.3.2.1-1: MCData standalone data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData ID	M	The identity of the MCData user towards which the data is sent
Date and Time	M	Date and time of transmission
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Payload	M	SDS content

7.4.3.2.2 MCData data disposition notification

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

Table 7.4.3.2.2-1: MCData data disposition notification

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

7.4.3.2.3 MCData group standalone data request

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

Table 7.4.3.2.3-1: MCData group standalone data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending data
MCData group ID	M	The MCData group ID to which the data is to be sent
Date and Time	M	Date and time of transmission
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCData user consumption
Payload	M	SDS content

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

7.4.3.3.1 General

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

7.4.3.3.2 Procedure

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

Pre-conditions:

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

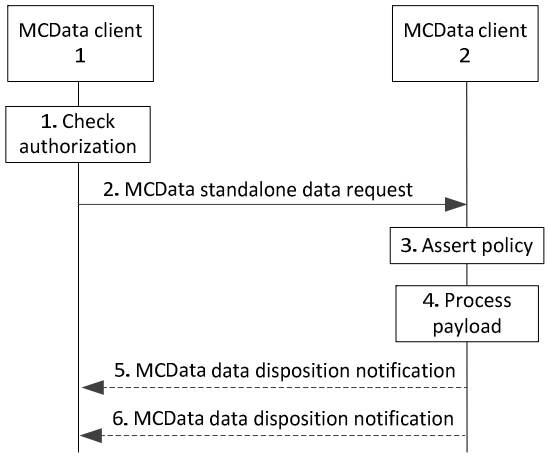

Figure 7.4.3.3.2-1: One-to-one standalone short data service using signalling control plane

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

2. If MCData user 1 is authorised MCData client 1 sends a MCData standalone data request towards the MCData client 2. The MCData standalone data request contains conversation identifier for message thread indication. The MCData standalone data request may contain disposition request if indicated by the user at MCData client 1.

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

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

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

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

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

7.4.3.4 Group standalone short data service using signalling control plane

7.4.3.4.1 General

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

7.4.3.4.2 Procedure

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

Pre-conditions:

1. MCData user 1 has initiated group communication for sending SDS data to the MCData group.

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

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

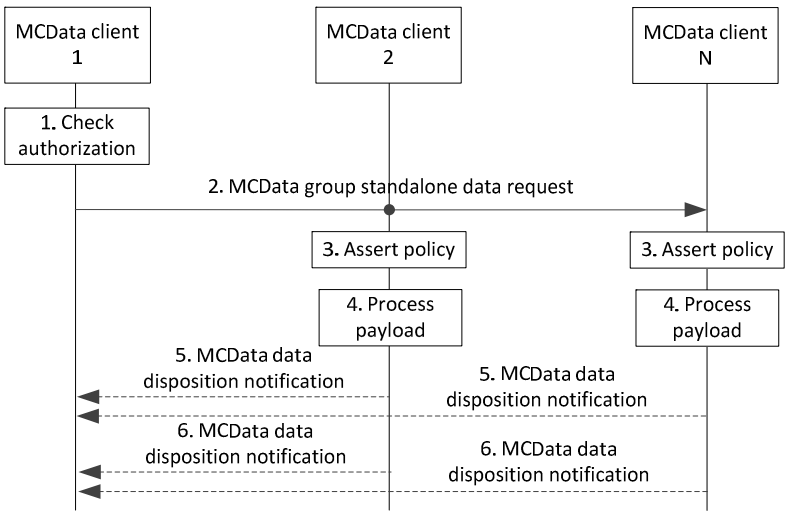

Figure 7.4.3.4.2-1: Group standalone short data service using signalling control plane

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

2. If MCData user 1 is authorised MCData client 1 sends a MCData group standalone data request towards the MCData group. The MCData group standalone data request contains conversation identifier for message thread indication. The MCData group standalone data request may contain disposition request if indicated by the user at MCData client 1. If MCData group standalone data request contains disposition request, MCData group standalone data request shall also contain the IP address of the MCData client 1.

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

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

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

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

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

7.5 File distribution

7.5.1 General

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

7.5.2 File distribution for on-network

7.5.2.1 Information flows for file distribution

7.5.2.1.1 MCData upload data request

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

Table 7.5.2.1.1-1: MCData upload data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading data
Content	M	Content to upload

7.5.2.1.2 MCData upload data response

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

Table 7.5.2.1.2-1: MCData upload data response

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

7.5.2.1.3 MCData download data request

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

Table 7.5.2.1.3-1: MCData download data request

Information element	Status	Description
MCData ID	M	The identity of the MCData user downloading data
Content reference	M	URL reference to the content to download

7.5.2.1.4 MCData download data response

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

Table 7.5.2.1.4-1: MCData download data response

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to download data
Content	O	Requested content to download

7.5.2.1.5 MCData FD request (using HTTP)

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

Table 7.5.2.1.5-1: MCData FD request (using HTTP)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending file
MCData ID	M	The identity of the MCData user receiving file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed reported is expected or not
Download indication	O	Indicates mandatory download
Content reference	M	URL reference to the content and file metadata information

7.5.2.1.6 MCData FD response (using HTTP)

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation

7.5.2.1.7 MCData download completed report

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

Table 7.5.2.1.7-1: MCData download completed report

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

7.5.2.1.8 MCData FD request (using media plane)

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

Table 7.5.2.1.8-1: MCData FD request (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending file
MCData ID	M	The identity of the MCData user receiving file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed reported is expected or not
Download indication	O	Indicates mandatory download
SDP offer	M	Media parameters offered
Content reference	M	URL reference to the content and file metadata information

7.5.2.1.9 MCData FD response (using media plane)

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

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

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending FD request
MCData ID	M	The identity of the MCData user sending response
Conversation Identifier	M	Identifies the conversation
SDP answer	M	Media parameters selected

7.5.2.1.10 MCData group standalone FD request (using HTTP)

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

Table 7.5.2.1.10-1: MCData FD request (using HTTP)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending file
MCData group ID	M	The MCData group ID to which the file is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed reported is expected or not
Download indication	O	Indicates mandatory download
Content reference	M	URL reference to the content and file metadata information

7.5.2.1.11 MCData group standalone FD response (using HTTP)

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

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

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

7.5.2.1.12 MCData group standalone FD request (using media plane)

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

Table 7.5.2.1.12-1: MCData group standalone FD request (using media plane)

Information element	Status	Description
MCData ID	M	The identity of the MCData user sending file
MCData group ID	M	The MCData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Reply Identifier	O	Identifies the original MCData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed reported is expected or not
Download indication	O	Indicates mandatory download
SDP offer	M	Media parameters offered
Content reference	M	URL reference to the content and file metadata information

7.5.2.1.13 MCData group standalone FD response (using media plane)

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

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

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

7.5.2.2 File upload using HTTP

7.5.2.2.1 General

The MCData client uses HTTP for a standalone data file upload towards the MCData server.

7.5.2.2.2 Procedure

The procedure in figure 7.5.2.2.2-1 describes the case where an MCData user is uploading file to media storage function of MCData server.

Pre-conditions:

1. The MCData user on the MCData client 1 is registered for receiving MCData service.

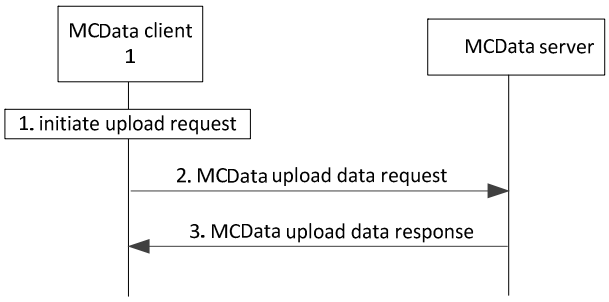

Figure 7.5.2.2.2-1: File upload using HTTP

1. The user at the MCData client 1 initiates a file upload request of the chosen file.
2. The file to be uploaded is received by the media storage client at the MCData client 1 and sent to the media storage function on the MCData server for storing using the MCData upload data request.
3. The MCData server also applies transmission control policy before storage and provides a MCData upload data response indicating success (along with file URL to the media storage client at the MCData client 1) or failure.

7.5.2.3 File download using HTTP

7.5.2.3.1 General

The MCData client uses HTTP for a standalone data file download from the MCData server.

7.5.2.3.2 Procedure

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

Pre-conditions:

1. The MCData user on the MCData client 1 is registered for receiving MCData service.

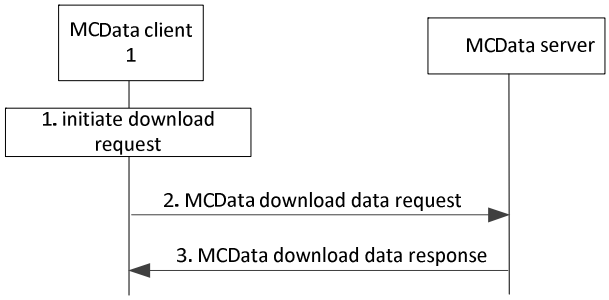

Figure 7.5.2.3.2-1: File download using HTTP

1. The user at the MCData client 1 initiates a file download request available at the indicated URL.
2. The file available at the URL (received in MCData FD request) is requested to be downloaded by the media storage client at the MCData client 1 from the media storage function on the MCData server using a MCData download data request.
3. The media storage function applies reception control policy and provides a MCData download data response including the file to the media storage client at MCData client 1.

7.5.2.4 One-to-one file distribution using HTTP

7.5.2.4.1 General

The MCData client uses HTTP for a standalone data file download from another MCData client. The procedure is appropriate for both mandatory and non-mandatory download cases.

7.5.2.4.2 Procedure

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

Pre-conditions:

1. The MCData users on the MCData client 1 and the MCData client 2 are already registered for receiving MCData service.
2. File to be distributed is uploaded to media storage function on MCData server using the procedures defined in subclause 7.5.2.2.

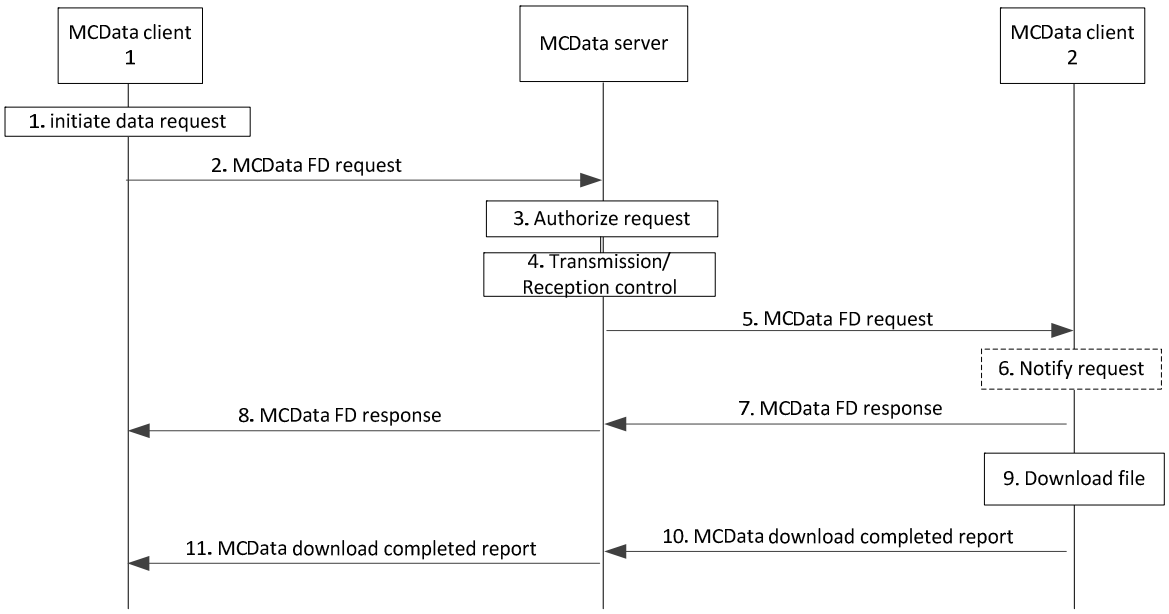

Figure 7.5.2.4.2-1: One-to-one file distribution using HTTP

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. If MCData user at MCData client 1 has requested to mandatory download at the recipient side, then MCData FD request contains mandatory download indication. The MCData FD request may contain download completed report indication if selected by the user at MCData client 1.
3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData FD request.
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 FD request towards the MCData user.

6. The receiving MCData client 2 notifies the user about the incoming MCData FD request (including file metadata, if present) which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCData FD request an accepted response is assumed.

7. MCData user 2 may provide a response (accept or reject) or not (ignore) to the notification, then MCData client 2 sends the MCData FD response to the MCData server. MCData client 2 automatically sends accepted MCData FD response when the incoming request included mandatory download indication.

8. The MCData server forwards the MCData FD response to the MCData client 1.

9. MCData client 2 downloads the file using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCData user 2 subsequent acceptance. The MCData client 2 records file download completed and notifies MCData user 2.

10. MCData client 2 initiates a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

11. The MCData file download completed report from MCData user may be stored by the MCData server for download history interrogation from the authorized MCData users. MCData download completed report is sent by the MCData server to the user at MCData client 1.

7.5.2.5 One-to-one file distribution using media plane

7.5.2.5.1 General

The MCData client uses the media plane for a standalone data file download from another MCData client. The procedure is appropriate for mandatory download case.

7.5.2.5.2 Procedure

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

Pre-conditions:

1. The MCData users on the MCData client 1 and the MCData client 2 are already registered for receiving MCData service.

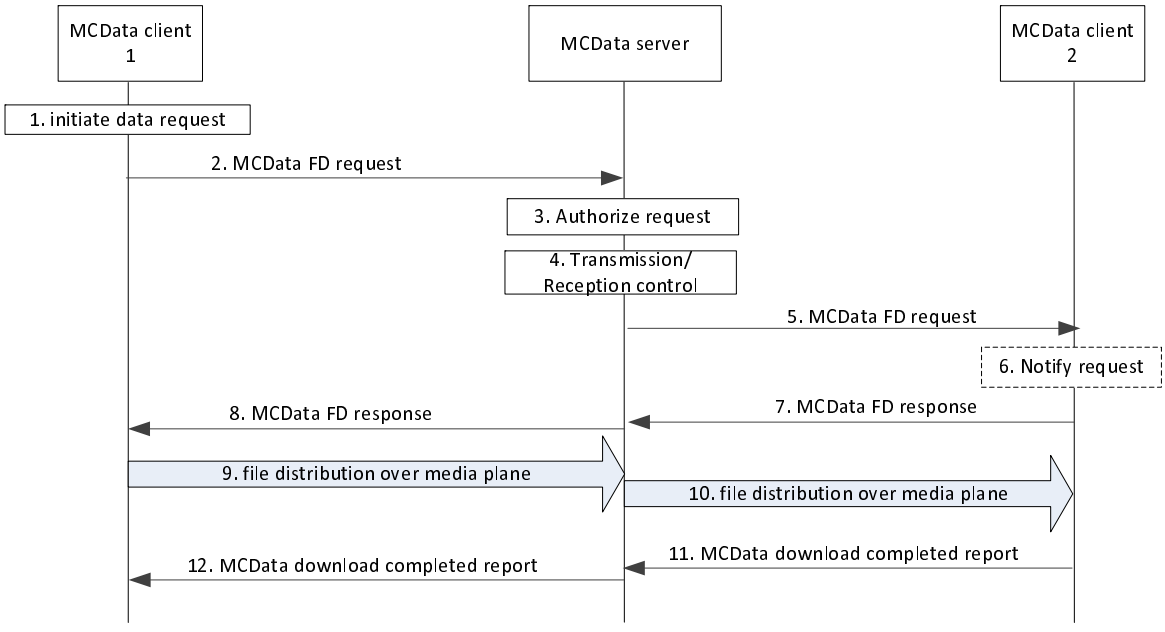

Figure 7.5.2.5.2-1: One-to-one file distribution using media plane

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

NOTE: 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. MCData client 2 initiates a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.
12. The MCData file download completed report from MCData client may be stored by the MCData server for download history interrogation from the authorized MCData users. MCData download completed report is sent by the MCData server to the user at MCData client 1.

7.5.2.6 Group standalone file distribution using HTTP

7.5.2.6.1 General

The initiation of a group standalone FD using HTTP to a selected group, results in affiliated group members receiving the file data.

7.5.2.6.2 Procedure

The procedure in figure 7.5.2.6.2-1 describes the case where an MCData user is initiating group standalone data communication for sending file to multiple MCData users, with or without download completed report request.

Pre-conditions:

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

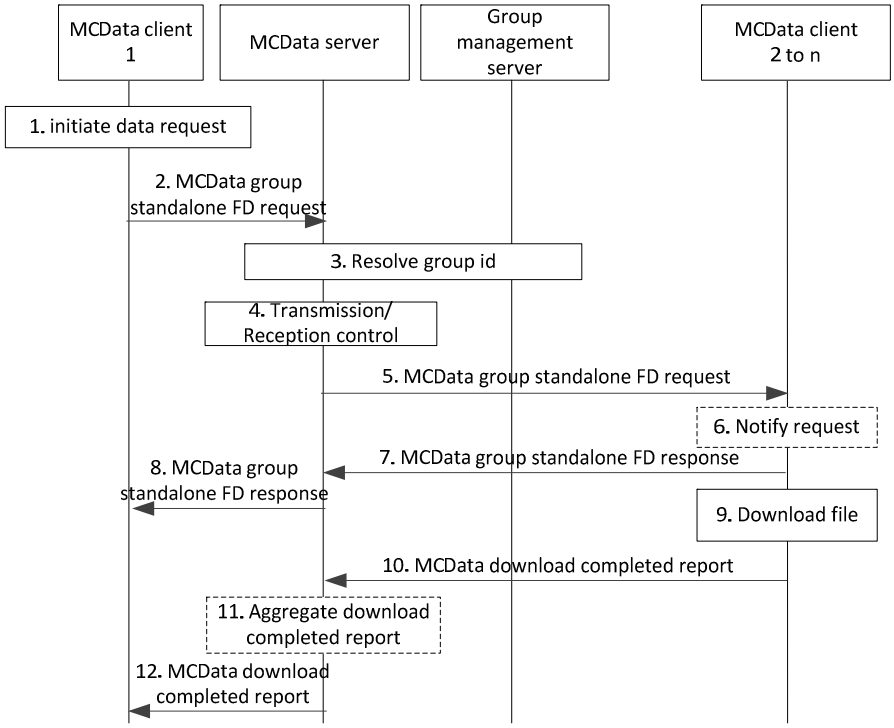

Figure 7.5.2.6.2-1: Group standalone FD using HTTP

1. The user at the MCData client 1 initiates a file distribution request to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. The MCData client 1 sends a MCData group standalone FD request towards the MCData server. The MCData FD request contains content payload in the form of file URL and may contain the file metadata information. The MCData group standalone data request contains target recipient(s) as selected by the user at MCData client 1. The MCData group standalone FD request contains conversation identifier for message thread indication. If MCData user at MCData client 1 has requested to mandatory download at the recipient side, then MCData group standalone FD request contains mandatory download indication. The MCData group standalone FD request may contain download completed report indication if selected by the user at MCData client 1.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData group standalone FD request. The MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server.

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.

6. The receiving MCData clients 2 to n notify the user about the incoming MCData group standalone FD request (including file metadata, if present) which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCData group standalone FD request an accepted response is assumed.

7. MCData user on MCData clients 2 to n provides a response (accept or reject or ignore) to the notification, then respective MCData client sends the MCData group standalone FD response to the MCData server. MCData client 2 to n automatically sends accepted MCData group standalone FD response when the incoming request included mandatory download indication.

8. The MCData server forwards the MCData group standalone FD response to the MCData client 1.

NOTE: 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(s) downloads the file using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCData user subsequent acceptance. The MCData clients successfully receiving the file, records file download completed and notifies MCData user.

10. The MCData client(s), successfully receiving the file, initiate a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

11. The MCData file download completed report from MCData client(s) may be stored by the MCData server for download history interrogation from the authorized MCData users. The MCData file download completed report from each MCData user may be aggregated.

12. Aggregated or individual MCData download completed report is sent by the MCData server to the user at MCData client 1.

7.5.2.7 Group standalone file distribution using media plane

7.5.2.7.1 General

The initiation of a group standalone FD using media plane to a selected group, results in affiliated group members receiving the file data.

7.5.2.7.2 Procedure

The procedure in figure 7.5.2.7.2-1 describes the case where an MCData user is initiating group standalone data communication for sending file to multiple MCData users, with or without download completed report request.

Pre-conditions:

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

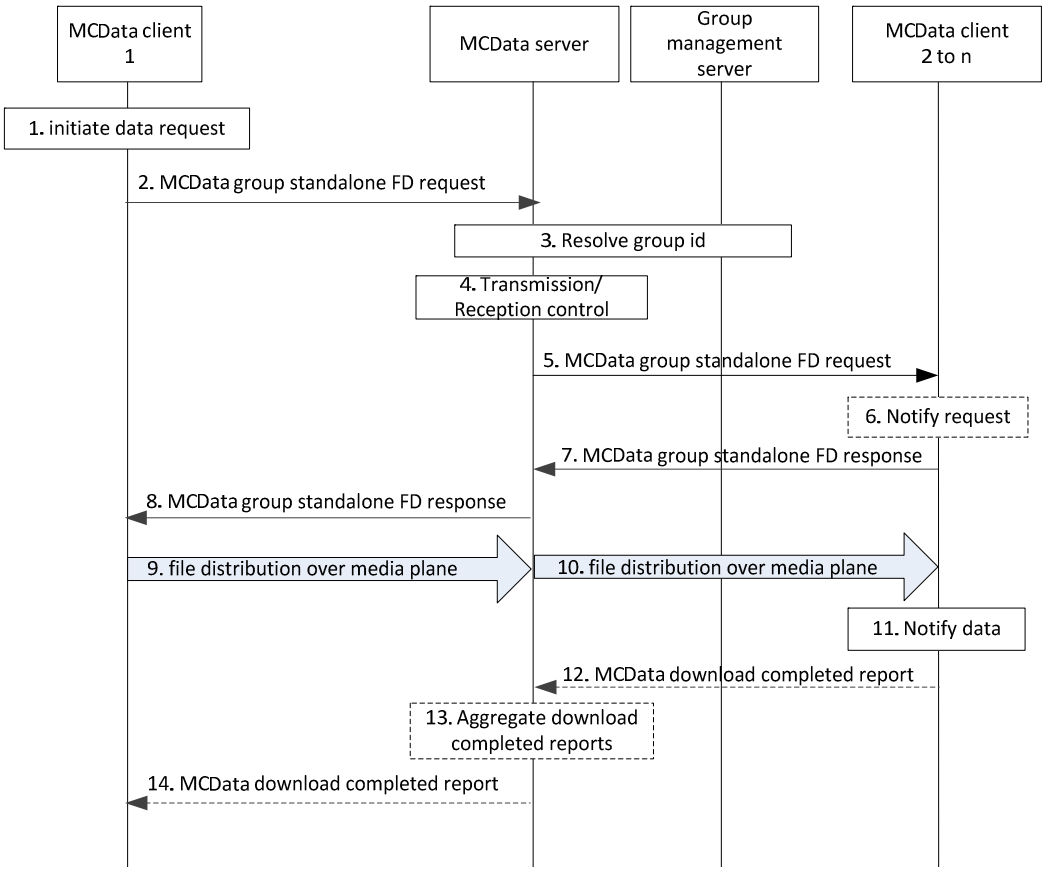

Figure 7.5.2.7.2-1: Group standalone FD using media plane

1. The user at the MCData client 1 initiates a file distribution request to multiple MCData users selecting a pre-configured group (identified by MCData group ID) and optionally particular members from that group.

2. MCData client 1 sends a MCData group standalone FD request towards the MCData server. The MCData group standalone FD request may contain the file metadata information. The MCData group standalone data request contains target recipient(s) as selected by the user at MCData client 1. The MCData group standalone FD request contains conversation identifier for message thread indication. MCData group standalone FD request may contain mandatory download indication. The MCData group standalone FD request may contain download completed report indication if selected by the user at MCData client 1.

3. MCData server checks whether the MCData user at MCData client 1 is authorized to send MCData group standalone FD request. The MCData server resolves the MCData group ID to determine the members of that group and their affiliation status, based on the information from the group management server.

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.

6. The receiving MCData clients 2 to n notifies the user about the incoming MCData group standalone FD request (including file metadata if present) 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 1: 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 2: MCData server is not required to wait for the complete download of file from MCData client 1 prior to initiating file distribution to MCData client 2.

11. The MCData clients successfully receiving the file, records file download completed and notifies MCData user.

12. MCData client 2 initiates a MCData download completed report for reporting file download completed, if requested by the user at MCData client 1.

13. The MCData file download completed report from MCData client(s) may be stored by the MCData server for download history interrogation from the authorized MCData users. The MCData file download completed report from each MCData user may be aggregated.

14. Aggregated or individual MCData file download completed report is sent to the disposition requesting user at MCData client 1.

7.6 Transmission and reception control

7.6.1 General

Based on the configurations (available in MC data user profile, group configuration and service configuration), the MC data transmission and reception control provides a necessary capability for an authorized user of the MC data service to transmit, receive notification messages due to various trigger conditions, advocates reception mode and terminate transmission when there is no longer a need to transmit. The subclauses below describe the transmission and reception control procedures using signalling control plane.

7.6.2 Transmission and reception control for on-network

7.6.2.1 Information flows for transmission and reception control

7.6.2.1.1 MCData control indication

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

Table 7.6.2.1.1-1: MCData control indication

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the control indication is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Control indication type	M	One of the following: - No permission to transmit data - No affiliated members found to the selected MCData group - Rejected due to exceeding data transmit size - Rejected due to exceeding data transmit time - Request to transmit is queued

7.6.2.1.2 MCData indication

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

Table 7.6.2.1.2-1: MCData indication

Information element	Status	Description
MCData ID	M	The identity of the MCData user towards which the control indication is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCData transaction
Control indication type	O	One of the following: - No permission to transmit data - No affiliated members found to the selected MCData group - Rejected due to exceeding data transmit size - Rejected due to exceeding data transmit time - Request to transmit is queued - Data expired and not available to download anymore
Deferred data list	O	List of references to deferred data awaiting download

7.6.2.1.3 MCData get deferred list request

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

Table 7.6.2.1.3-1: MCData get deferred list request

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting deferred list

7.6.2.1.4 MCData get deferred list response

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

Table 7.6.2.1.4-1: MCData get deferred list response

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting deferred list
Deferred data list	M	List of references to deferred data awaiting download

7.6.2.2 Automatic transmission for SDS

7.6.2.2.1 General

When SDS message is sent, the data is transferred from the sending MCData client to the receiving MCData client without any request/grant procedure or any explicit actions on the part of the receiving MCData client.

7.6.2.2.2 Procedure

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

Pre-conditions:

1. MCData user is configured with permission to transmit data.

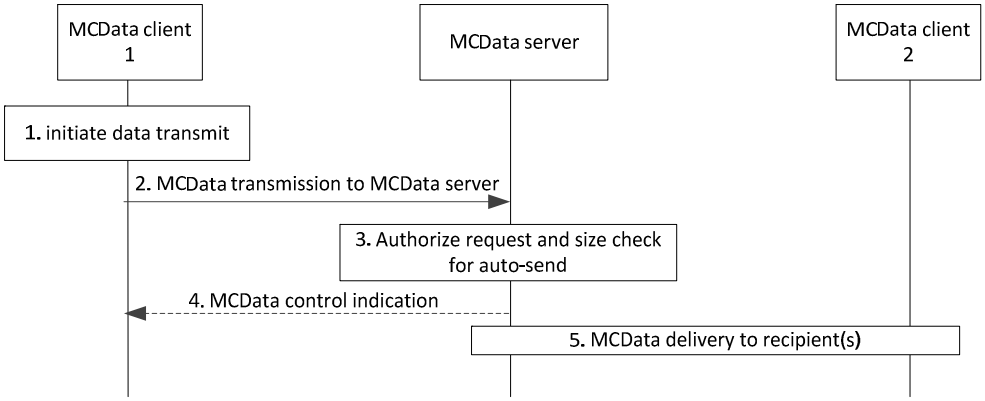

Figure 7.6.2.2.2-1: Automatic transmission for SDS

1. MCData user selects the data to transmit and the recipient MCData user or MCData group.
2. MCData client checks for MCData user's permission to transmit data, and checks if the data size is less than the maximum data size for SDS. MCData client calculates the total transmission request size and determines to select one of the appropriate procedure 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 server verifies if the MCData user is authorized to transmit and the data size in the received transmission request is less than the maximum data size for SDS.
4. MCData server may send one of the following MCData control indications:

   a) If the MCData user does not have permission to transmit data to another MC Data user or MC Data group then the "No permission to transmit data" control indication is sent.

   b) If the selected transmission is for a MCData group and there are no affiliated group members, then the transmission control on MCData server sends the "No affiliated members found to the selected MCData group" control indication.

   Otherwise continue with step 5.
5. MCData server automatically transmits the data to the selected MCData user or the affiliated members of the selected MCData group according to the procedures selected in step 2.

7.6.2.3 Send data with mandatory download

7.6.2.3.1 General

The mandatory download procedure allows a sending MCData client to send data to a receiving MCData client, where the receiving MCData client is compelled to download the data.

7.6.2.3.2 Procedure

The procedure in figure 7.6.2.3.2-1 describes the case where MCData user is using FD. The FD is subjected to transmission control prior to transmitting data to the selected recipient user or affiliated members of the selected MCData group for mandatory download.

Pre-conditions:

1. MC Data user is configured with permission to transmit data.
2. MC Data administrator has configured maximum data size for FD.
3. Maximum amount of data that a MC Data user can transmit in a single request is configured.

4. Maximum amount of time that a MC Data user can transmit in a single request is configured.

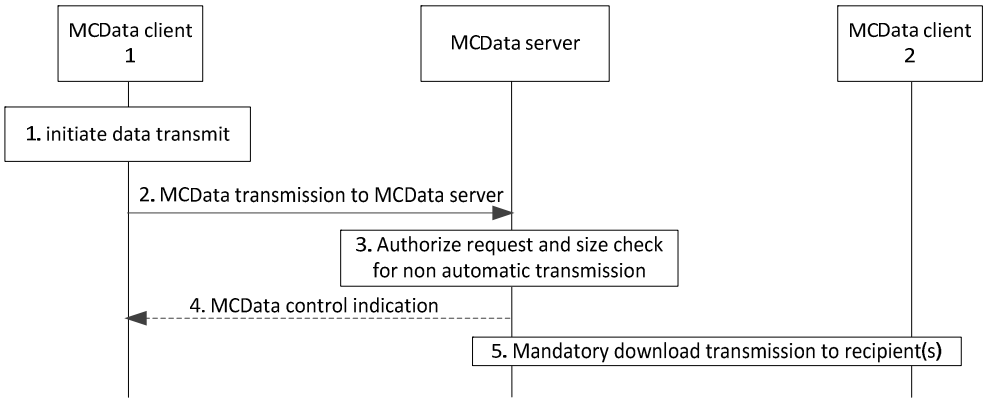

Figure 7.6.2.3.2-1: Send data with mandatory download

1. MCData user selects the data to transmit, the recipient MCData user or MCData group and the indication for mandatory download.

2. MCData client has checked for MCData user's permission to transmit data. MCData client calculates the total transmission request size and determines to select one of the appropriate procedures described in subclause 7.5.2.4, 7.5.2.5, 7.5.2.6 or 7.4.2.7 and including the mandatory download indication.

3. Transmission control on the server verifies if the MCData user is authorized to transmit and the data size in the received transmission request is within the maximum size allowed for FD transmission.

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

   a) If the MCData user does not have permission to transmit data to another MC Data user or MC Data group then the "No permission to transmit data" control indication is sent.

   b) If the data size requested to be transmitted is more than the maximum amount of data that an MCData user can transmit in a single request, the transmission control on MCData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit size".

   c) If the data transmission time exceeds the maximum amount of time that an MCData user can transmit in a single request, the transmission control on MCData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".

   d) If the selected transmission is for a MCData group and there are no affiliated group members, then the transmission control on MCData server sends the "No affiliated members found to the selected MCData group" control indication.

   e) MCData server may queue the data transmit request for later transmission with control indication "Request to transmit is queued".

   Otherwise continue with step 5.

5. MCData server transmits the data to the selected MCData user or the affiliated members of the selected MCData group according to the procedures selected in step 2 (where the recipient MCData client receives the data automatically).

7.6.2.4 Send data without mandatory download

7.6.2.4.1 General

The send data without mandatory download procedure allows the receiving MCData client to accept download, defer download (i.e. no response) or refuse (e.g. by the user deleting the notification item) the data sent from the sending MCData client.

7.6.2.4.2 Procedure

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

Pre-conditions:

1. MCData user is configured with permission to transmit data.
2. Maximum amount of data or time that an MCData user can transmit in a single request is configured.
3. Time limit for the temporarily stored data waiting to be delivered to a receiving user is configured.

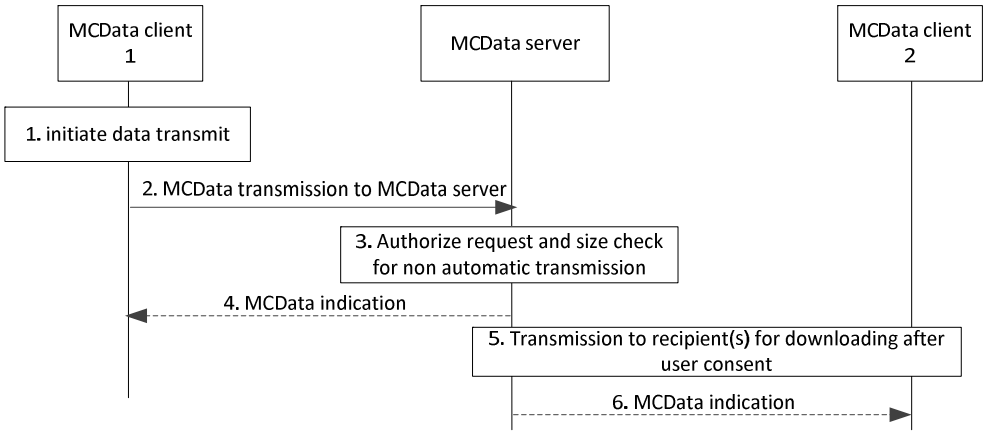

Figure 7.6.2.4.2-1: Send data without mandatory download

1. MCData user selects the data to transmit and the recipient MCData user or MCData group and does not select the mandatory download indication.
2. MCData client has checked for MCData user's permission to transmit data and the data size is within the maximum data size allowed. The MCData client calculates the total transmission request size and determines to select procedure described in subclause 7.5.2.4 or 7.5.2.6 and without including the mandatory download indication.
3. Transmission control on the server verifies if the MCData user is authorized to transmit and the data size in the received transmission request is within the maximum data size allowed.
4. MCData server sends control indication appropriate to trigger condition:
   a) If the MCData user does not have permission to transmit data to another MC Data user or MC Data group then the "No permission to transmit data" control indication is sent.
   b) If the selected transmission is for a MCData group and there are no affiliated group members, then the transmission control on MCData server sends the "No affiliated members found to the selected MCData group" control indication.
   c) If the data size requested to be transmitted is more than the maximum amount of data that an MCData user can transmit in a single request, the transmission control on MCData server rejects the data transmission requests and sends the rejection control indication "Rejected due to exceeding data transmit size".
   d) If the data transmission time exceeds the maximum amount of time that an MCData user can transmit in a single request (applies to DS only), the transmission control on MCData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".
   e) MCData server may queue the data transmit request for later transmission with a control indication "Request to transmit is queued".

Otherwise, continue with step 5.

5. If the temporarily stored data has not expired, the MCData server transmits the data to the selected MCData user or the affiliated members of the selected MCData group according to the procedures selected in step 2 (where the recipient MCData client may receive the data automatically).

6. Otherwise, MCData server sends MCData control indication appropriate to trigger condition:

   a) If the timer expired for periodic announcement with the list of available recently invited data group communications, the recipient MCData client waiting to receive the temporarily stored data receives control indication with "List of available temporarily stored data waiting to download".

   b) If the temporarily stored data is expired, the data may be purged from the temporary store and the recipient MCData user is informed with control indication "Data expired and not available to download anymore".

7.6.2.5 Accessing list of deferred data group communications

7.6.2.5.1 General

This procedure allows an MCData client to obtain a list of deferred data communications.

7.6.2.5.2 Procedure

The procedure in figure 7.6.2.5.2-1 describes the case where the recipient MCData client receives the list of available temporarily stored data waiting to download for the deferred data group communications.

Pre-conditions:

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

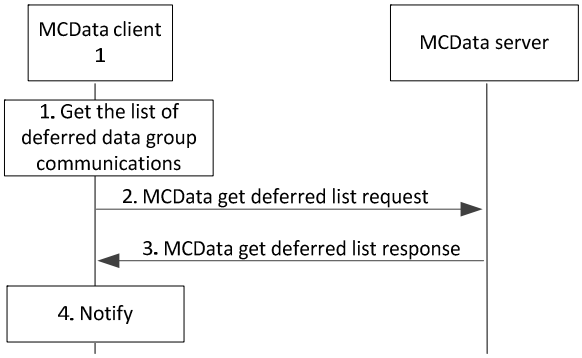

Figure 7.6.2.5.2-1: Accessing list of deferred data group communications

1. MCData user initiates the request to get the list of temporarily stored data for the deferred data group communications on the MCData server e.g. due to recipient MCData client deferred to download.

2. MCData client sends a MCData get deferred list request to the MCData server.

3. MCData server generates the list of temporarily stored data for the affiliated group(s), available to download for the requesting MCData client and sends the list in the MCData get deferred list response.

4. MCData client notifies the list of temporarily stored data for the deferred data group communications, upon which the MCData user may decide to retrieve the corresponding data.

7.7 Communication release

7.7.1 General

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

7.7.2 Communication release for on-network

7.7.2.1 Information flows for communication release

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

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

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

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

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

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

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

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

7.7.2.1.3 Communication release request (group communication using media plane)

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

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

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

7.7.2.1.4 Communication release response (group communication using media plane)

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

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

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

7.7.2.1.5 Communication release request (communication using HTTP)

Table 7.7.2.1.5-1 describes the information flow for the communication release request (in subclause 7.7.2.2.3.2) sent from the MCData client to the MCData server.

Table 7.7.2.1.5-1: Communication release request (communication using HTTP)

Information element	Status	Description
MCData ID	M	The identity of the MCData user uploading data
URL reference	M	File URL reference on which the communication is to be released

7.7.2.1.6 Communication release response (communication using HTTP)

Table 7.7.2.1.6-1 describes the information flow for the communication release response (in subclause 7.7.2.2.3.2) sent from the MCData server to the MCData client.

Table 7.7.2.1.6-1: Communication release response (communication using HTTP)

Information element	Status	Description
MCData ID	M	The identity of the MCData user requesting to upload data
Release confirmation	M	Communication released or not indication

7.7.2.1.7 Data not available control indication

Table 7.7.2.1.7-1 describes the information flow for the data not available control indication sent from the MCData server to the MCData client.

Table 7.7.2.1.7-1: Data not available control indication

Information element	Status	Description
MCData ID	M	The identity of the MCData user receiving file URL reference
Conversation Identifier	M	Identifies the conversation
URL reference	M	Indicates URL reference of the file that is not available to download

7.7.2.2 MCData user initiated communication release

7.7.2.2.1 General

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

7.7.2.2.2 Release of MCData communication using media plane

7.7.2.2.2.1 General

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

Editor's Note: Release of MCData communication over MBMS is FFS.

7.7.2.2.2.2 Procedure

The procedure in figure 7.7.2.2.2.2-1 describes signalling control plane procedure for the case where MCData communication is ongoing and transmitting participant initiates MCData communication release. The procedure is applicable for one-to-one and group MCData communications.

Pre-conditions:

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

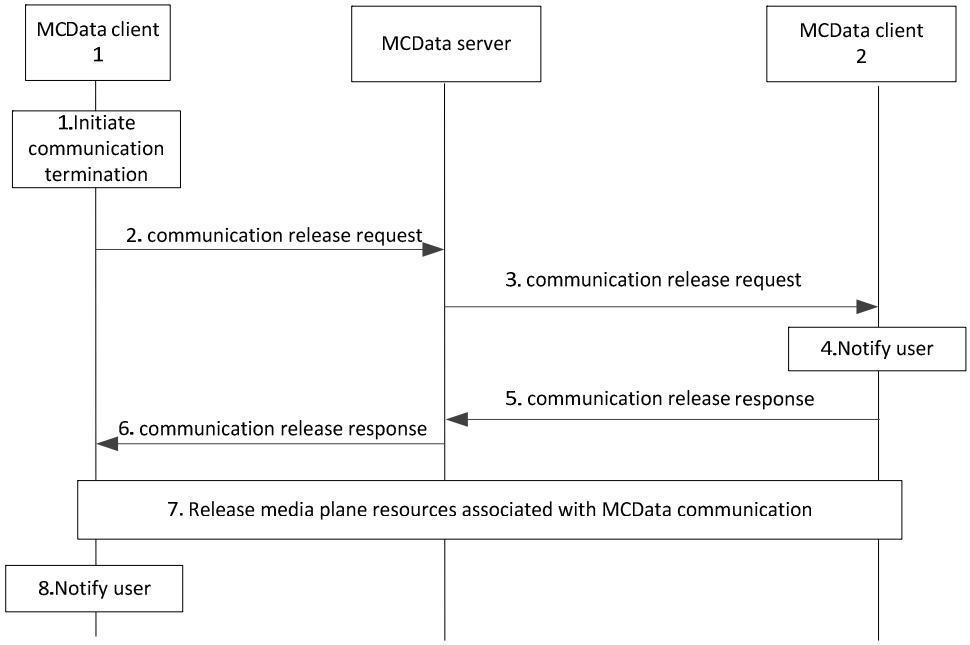

Figure 7.7.2.2.2.2-1: Release of MCData communication using media plane

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

8. MCData client 1 notifies the MCData user about the communication release.

7.7.2.2.3 Release of MCData communication using HTTP

7.7.2.2.3.1 General

The subclause describes the procedure for MCData user initiated MCData communication release where MCData communication is established with procedures for file distribution using HTTP.

7.7.2.2.3.2 Procedure

The procedure in figure 7.7.2.2.3.2-1 describes signalling control plane procedure for the case where MCData communication is ongoing and transmitting participant initiates MCData communication release. The procedure is applicable for one-to-one and group MCData communications.

Pre-conditions:

1. MCData users on MCData client 1 and client 2 are already registered for receiving MCData service
2. MCData client 1 is transmitting file to other MCData client(s).

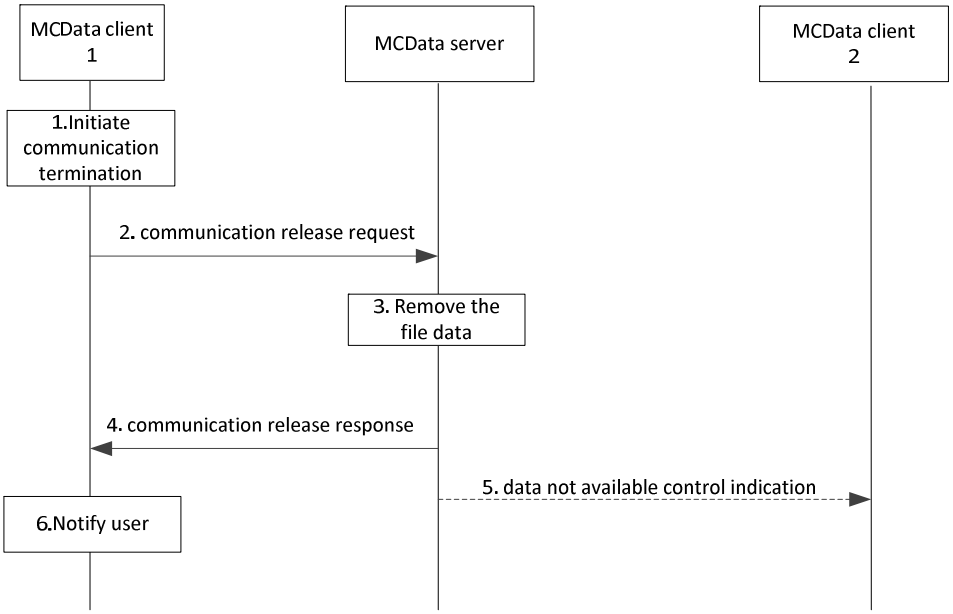

Figure 7.7.2.2.3.2-1: Release of MCData communication using HTTP

1. MCData user at MCData client 1 requests to release ongoing file transmission.
2. MCData client 1 sends communication release request towards MCData server identifying the HTTP file transmission.
3. MCData server stops any ongoing file transfer and removes the file data already stored by MCData server.
4. MCData server sends communication release response back to MCData client 1.
5. If file uploading over HTTP is completed and MCData clients have received the file metadata e.g., file URL, then MCData server also sends "data not available" control indication to all the participants receiving file metadata.
6. MCData client 1 notifies the MCData user about the file transmission communication release.

7.7.2.3 MCData server initiated communication release without prior indication

7.7.2.3.1 General

MCData server initiates the release of an ongoing MCData communication, since at least one of the communication release conditions are met e.g. lack of bearer capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on the configuration, MCData server either pre-empts the MCData communication without giving prior indication to MCData client or notifies the intent of release to the MCData client initiating communication. Latter scenario allows the MCData user to request for extension of MCData communication and defer the communication release.

7.7.2.3.2 Release of MCData communication using media plane

7.7.2.3.2.1 General

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

Editor's Note: Release of MCData communication over MBMS is FFS.

7.7.2.3.2.2 Procedure

The procedure in figure 7.7.2.3.2.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, based on communication release conditions, MCData server initiates the communication release. The procedure is applicable for one-to-one and group communication.

Pre-conditions:

1. MCData users on MCData client 1, client 2 and client 3 are already registered for receiving MCData service.
2. A MCData administrator has configured the limits for the maximum amount of data and time that a participant transmits from a single request to transmit.
3. A MCData communication is ongoing between MCData client 1, client 2 and client 3.

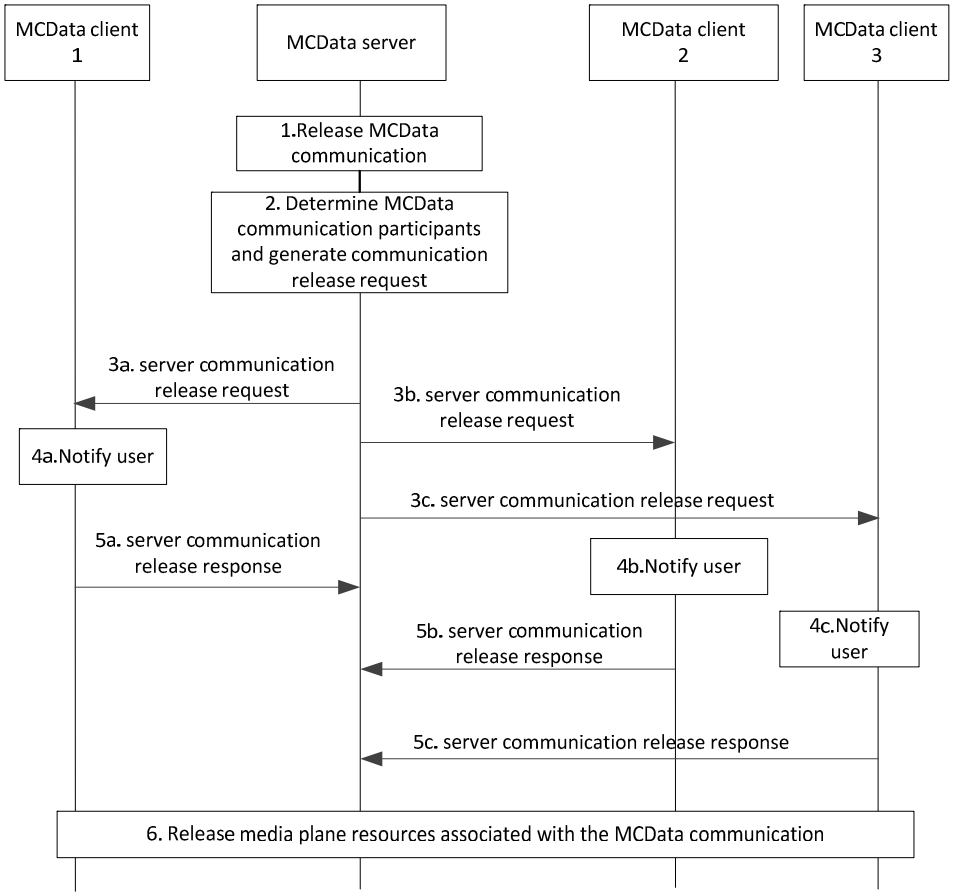

Figure 7.7.2.3.2.2-1: MCData server initiated release of MCData communication using media plane

1. MCData server would like to release the ongoing MCData communication, identified by conversation identifier, since at least one of the release conditions are met e.g. lack of capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on configuration, MCData server decides to pre-empt the MCData communication without giving prior indication to MCData client 1.
2. MCData server identifies the participants of the ongoing MCData communication and generates communication release request to release ongoing MCData communication.
3. MCData server sends server 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 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 Release of MCData communication using HTTP

7.7.2.3.3.1 General

The subclause describes the procedure for MCData server initiated MCData communication release without prior indication, where MCData communication is established with procedures for file distribution using HTTP.

7.7.2.3.3.2 Procedure

The procedure in figure 7.7.2.3.3.2-1 describes signalling control plane procedure for the case where during ongoing MCData communication, communication release conditions, MCData server initiates the communication release. The procedure is applicable for one-to-one and group communication.

Pre-conditions:

1. MCData users on MCData client 1, client 2 and client 3 are already registered for receiving MCData service.
2. A MCData administrator has already configured the limits for the maximum amount of data and time that a participant transmits from a single request to transmit.
3. A MCData communication is ongoing between MCData client 1, client 2 and client 3. MCData client 1 is the initiator of the MCData communication

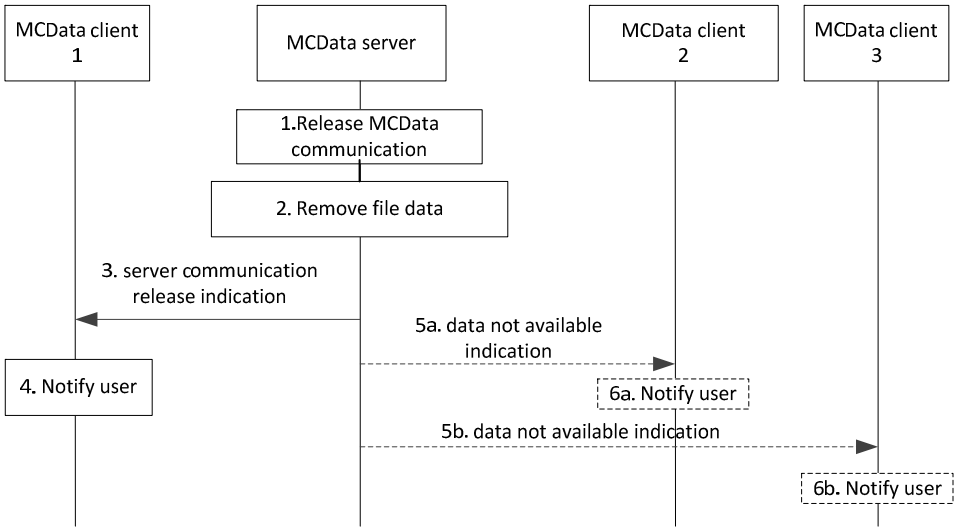

Figure 7.7.2.3.3.2-1: MCData server initiated release of MCData communication using HTTP

1. MCData server releases the ongoing MCData communication, identified by the conversation identifier, since at least one of the release conditions are met e.g. lack of capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on the configuration, MCData server pre-empts the MCData communication without giving prior indication to MCData client 1.
2. MCData server removes the data stored by MCData server.
3. MCData server sends server communication release indication including the reason for release to MCData client 1.
4. MCData client 1 notifies MCData user about server initiated communication release.
5. If file uploading over HTTP is completed and MCData clients have received the file metadata e.g. file URL, then MCData server also sends "data not available" indication to all the participants receiving file metadata. Otherwise, there is no such indication.
6. MCData users are notified about the release of the MCData communication.

7.7.2.4 MCData server initiated communication release with prior indication

7.7.2.4.1 General

The subclause describes the procedure for MCData server initiated MCData communication release with prior indication, where MCData communication is established as SDS using media plane or file distribution using media plane or file distribution using HTTP.

7.7.2.4.2 Procedure

The procedure in figure 7.7.2.4.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, based on communication release conditions, MCData server initiates communication release. As a result of configuration check, MCData server notifies the intent to release MCData communication, optionally requesting for more information (e.g. to know the remaining data volume to transmit) from the MCData client initiating MCData communication.

Pre-conditions:

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

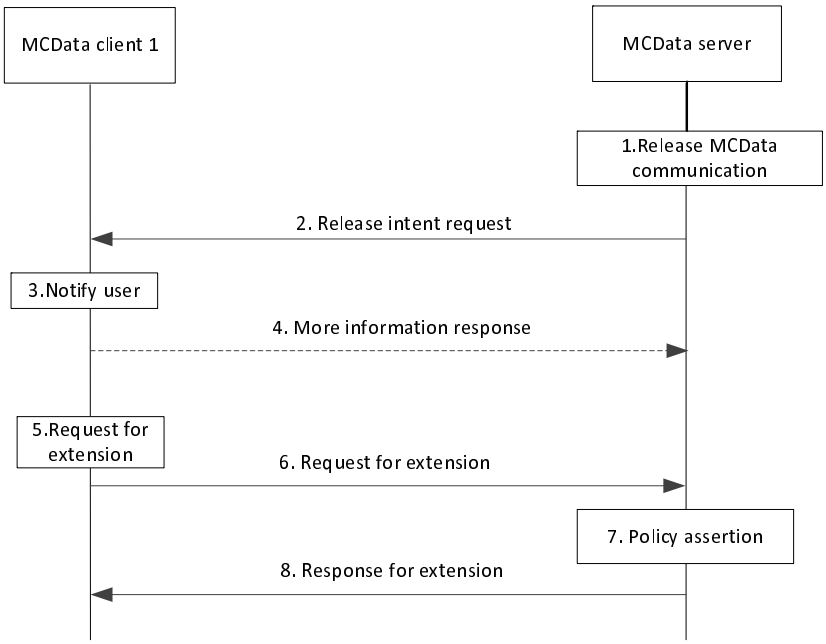

Figure 7.7.2.4.2-1: MCData server initiates communication release with prior indication

1. MCData server releases the ongoing MCData communication, identified by the conversation identifier, since at least one of the release conditions are met e.g. lack of capacity, limit for the maximum amount of data or time that a participant transmits from a single request to transmit exceeded. Based on the configuration, MCData server notifies the intent to release MCData communication.
2. MCData server sends the release intent request towards the communication initiating MCData client 1.MCData server may include request for more information (e.g. to know the remaining data volume to transmit).
3. MCData client 1 informs MCData user about the intent to release communication.
4. If request for more information is included in the received release intent request, MCData client 1 sends more information response including the remaining amount of data to transmit.

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

5. MCData user at MCData client 1 requests for extension of the ongoing MCData communication.
6. MCData client 1 sends request for extension of the MCData communication.
7. Upon receiving the request for extension of MCData communication from the MCData client 1, MCData server asserts policies to accept or reject the request for extension.
8. MCData server sends response for extension with success or failure result to MCData client 1.

NOTE 2: MCData communication will continue if MCData server accepted the request for extension from MCData client 1. Otherwise, MCData communication is released according to procedures described in subclause 7.7.2.3.

7.7.2.5 Authorized MCData user initiated communication release without prior indication

7.7.2.5.1 General

An authorized MCData user at any time during an ongoing MCData communication decides to release communication. The authorized user may decide to release MCData communication without prior indication to the initiator MCData client.

7.7.2.5.2 Procedure

The procedure in figure 7.7.2.5.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, authorized MCData user initiates MCData communication release without prior indication to the initiator MCData client. An authorized MCData user is part of the ongoing MCData communication.

Pre-conditions:

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

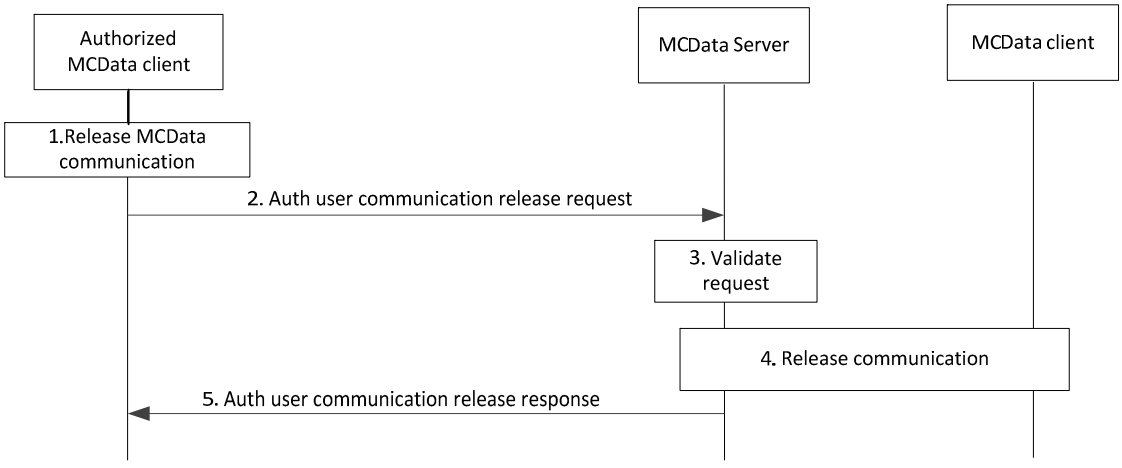

Figure 7.7.2.5.2-1: An authorized MCData user initiates communication release without prior indication

1. An authorized MCData user requests to release the ongoing MCData communication, without providing prior indication to the initiator of the MCData communication, MCData client 1.
2. An authorized MCData client sends auth user communication release request towards MCData server identifying the MCData communication to release. The request also includes indication to the MCData server to release

MCData communication without prior indication to the initiator of the MCData communication, MCData client 1.

3. MCData server validates the user from whom the communication release request is received and checks whether the requesting MCData user is authorized to release communication or not.

4. If the user is authorized to release communication, then MCData server releases the ongoing MCData communication according to procedures described in subclause 7.7.2.3.

5. MCData server sends auth user communication release response containing the result of MCData communication release back to authorized MCData client 1.

7.7.2.6 Authorized MCData user initiated communication release with prior indication

7.7.2.6.1 General

An authorized MCData user at any time during an ongoing MCData communication decides to release communication. The authorized user may decide to release MCData communication with prior indication to the initiator MCData client. A prior indication allows initiator MCData client to request for extension for the MCData communication.

7.7.2.6.2 Procedure

The procedure in figure 7.7.2.6.2-1 describes signalling control plane procedure for the case where during an ongoing MCData communication, authorized MCData user initiates MCData communication release with prior indication to the initiator MCData client. An authorized MCData user is part of the ongoing MCData communication. An initiator MCData user optionally decides to request for the extension of the ongoing communication.

Pre-conditions:

1. An authorized MCData user on MCData client is already registered for receiving MCData service.

2. A MCData communication is ongoing between MCData participants and authorized MCData user is keeping track of which participants are receiving communication e.g. through "message delivered" and/or "message read" indications for the MCData communication

3. MCData client 1 is the initiator of the MCData communication.

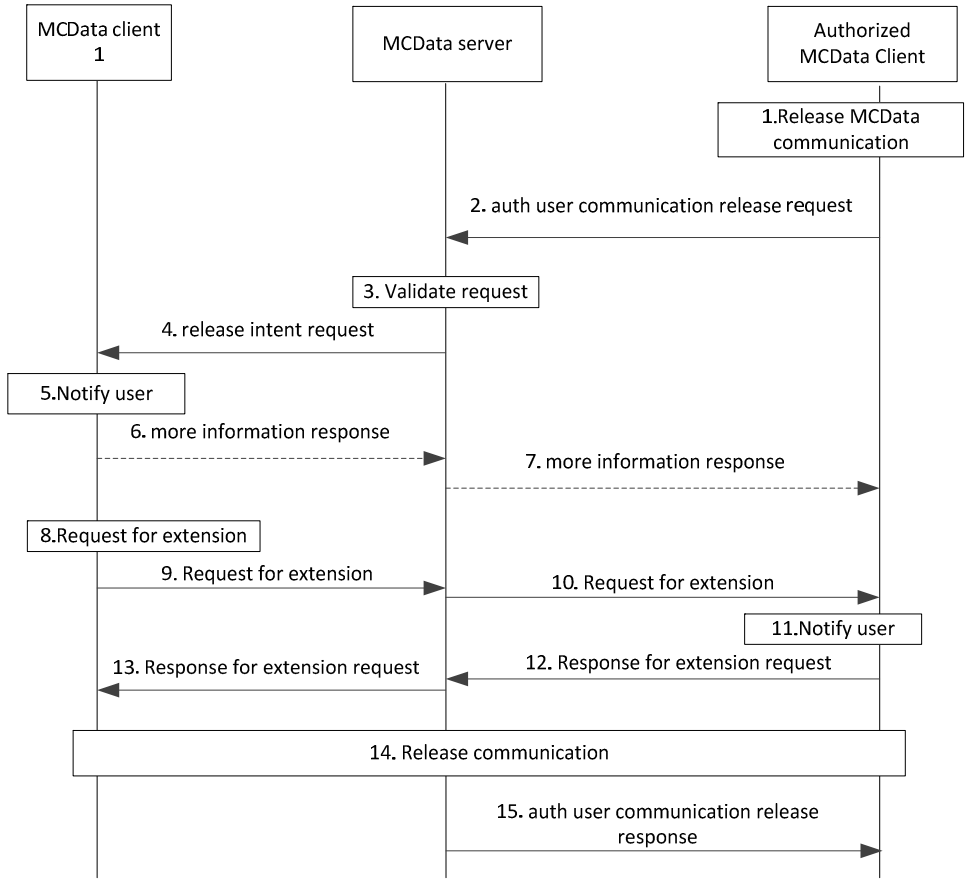

Figure 7.7.2.6.2-1: An authorized MCData user initiates communication release with prior indication

1. An authorized MCData user requests to release the ongoing MCData communication by providing prior indication to the initiator of MCData communication, MCData client 1.

2. An authorized MCData client sends auth user communication release request towards MCData server including the communication identifier identifying the MCData communication to release. Authorized MCData client may include request for more information (e.g. to know the remaining data volume to transmit). The request also includes indication to MCData server to release MCData communication with prior indication to the initiator MCData client.

3. MCData server validates the user from whom the communication release request is received and checks whether the requesting user is authorized to release communication or not.

4. If the user is authorized to release communication, then the MCData server sends release intent request, may be including the reason for the release. MCData server may include request for more information as received in the request from the authorized MCData client.

5. MCData client informs MCData user about the intent to release communication by the authorized MCData user.

6. If request for more information is included in the received release intent request, MCData client 1 sends more information response including the remaining amount of data to transmit.

7. MCData server forwards the more information response to the authorized MCData client.

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

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

9 and 10. MCData client sends request for extension towards MCData server. And MCData server forwards the request for extension towards the authorized MCData client.

11. Authorized MCData client notifies the authorized user about the incoming request for extension. An authorized MCData user decides to accept or reject the request for extension.

12 and 13. Authorized MCData user decision is sent in response for extension towards the MCData server. MCData server forwards the response for extension to MCData client 1.

14. MCData communication will continue if the authorized user accepted the request for extension from MCData client 1. Otherwise, MCData communication will be released according to procedures described in subclause 7.7.2.3.

15. After MCData communication is released, MCData server sends the auth user communication release response back to the authorized MCData client.

7.8 Conversation management

7.8.1 General

Conversation management is a collection of related MCData transmissions for a given activity. Conversation management associates SDS and FD communication transmission and present them as a single thread to the user.

7.8.2 Conversation management for on-network

7.8.2.1 Information flows for conversation management

The information flow parameters related to conversation management are as described in the subclauses 7.4.2.1 and subclauses 7.5.2.1.5, 7.5.2.1.6, 7.5.2.1.7, 7.5.2.1.8, 7.5.2.1.9, 7.5.2.1.10, 7.5.2.1.11, 7.5.2.1.12, and 7.5.2.1.13.

7.8.2.2 One-to-one conversation management

7.8.2.2.1 Procedure

The procedure for an MCData user to associate multiple MCData transmissions between a pair of users for a given activity is illustrated in figure 7.8.2.2.1-1.

Pre-conditions:

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

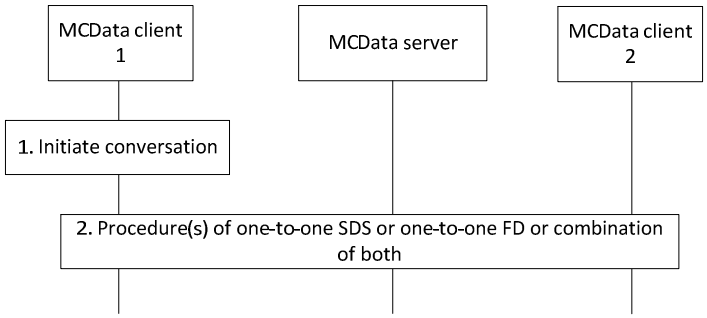

Figure 7.8.2.2.1-1: One-to-one conversation management

1. The user at MCData client 1 initiates conversation. A universally unique conversation identifier is generated to identify new conversation. Conversation identifier is used in procedures mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier

is used in procedures mentioned in step 2. To allow multiple parallel conversations for the same pair of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of one-to-one SDS or one-to-one FD or combination of both these procedures can be executed.

7.8.2.3 Group conversation management

7.8.2.3.1 Procedure

The procedure for an MCData user to associate multiple MCData transmissions between users of a group for a given activity is illustrated in figure 7.8.2.3.1-1.

Pre-conditions:

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

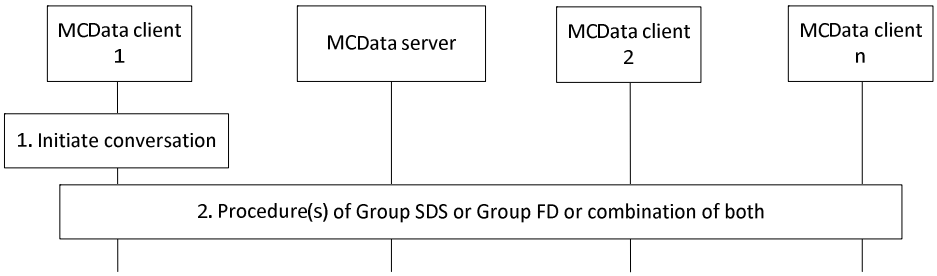

Figure 7.8.2.3.1-1: Group conversation management

1. The user at MCData client 1 initiates conversation. A unique conversation identifier is generated to identify new conversation. Conversation identifier is used in procedures mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier is used in procedures mentioned in step 2. To allow multiple parallel conversations for the same group of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.
2. The procedure of group SDS or group FD or combination of both these procedures can be executed.

7.8.3 Conversation management for off-network

7.8.3.1 One-to-one conversation management

7.8.3.1.1 Procedure

The procedure for an MCData user to associate multiple off-network MCData SDS transmissions between a pair of users is illustrated in figure 7.8.3.1.1-1.

Pre-conditions:

1. MCData client 1 and MCData client 2 are members of the same ProSe Discovery group and are ProSe 1:1 direct communication capable.
2. MCData client 1 has discovered MCData client 2 in proximity, associated with MCData user B, using ProSe Discovery procedures.

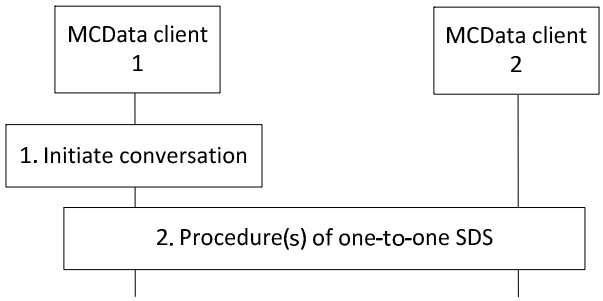

Figure 7.8.3.1.1-1: One-to-one conversation management

1. The user at MCData client 1 initiates conversation. A universally unique conversation identifier is generated to identify the new conversation. Conversation identifier is used in SDS procedure mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier is used in SDS procedure mentioned in step 2. To allow multiple parallel conversations for the same pair of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of one-to-one SDS can be executed.

7.8.3.2 Group conversation management

7.8.3.2.1 Procedure

The procedure for an MCData user to associate multiple off-network MCData SDS transmissions between users of a group is illustrated in figure 7.8.3.2.1-1.

Pre-conditions:

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

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

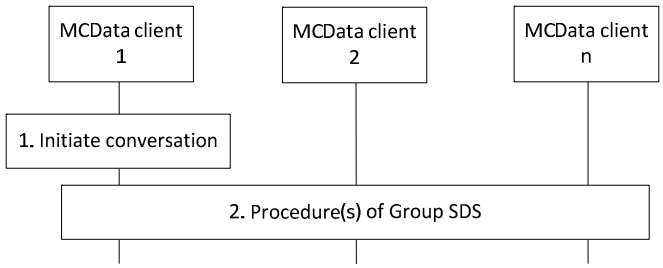

Figure 7.8.3.2.1-1: Group conversation management

1. The user at MCData client 1 initiates conversation. A universally unique conversation identifier is generated to identify the new conversation. Conversation identifier is used in SDS procedures mentioned in step 2. If the intent of the user at MCData client 1 is to transmit within an existing conversation, then corresponding conversation identifier is used in SDS procedures mentioned in step 2. To allow multiple parallel conversations for the same group of users, different conversation identifier is used for each conversation. The MCData users can view the MCData conversation at any time after the first MCData transaction is initiated within the conversation.

2. The procedure of group SDS 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.

7.9.2 Preset values for enhanced status

The enhanced status information i.e. the set of possible values corresponding to the activities of the MCData user, shall be configured by the MCData administrator. The configuration of status values is applicable on a per-group basis, and therefore shall be part of the MCData group configuration data as described in Annex A.4.

The configuration mechanism shall allow the MCData administrator to configure a minimum of 32 possible values and allow up to 65536 separate values. The set of values may be divided into a fixed set of values defined by 3GPP standards which are common across all MCData systems, and a set which may be freely configured for any purpose.

7.9.3 Enhanced status for on-network

7.9.3.1 Sharing enhanced status information

7.9.3.1.1 Procedure

The procedure for an MCData user to share the enhanced status information to the members of the selected group is illustrated in figure 7.9.3.1.1-1.

Pre-conditions:

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

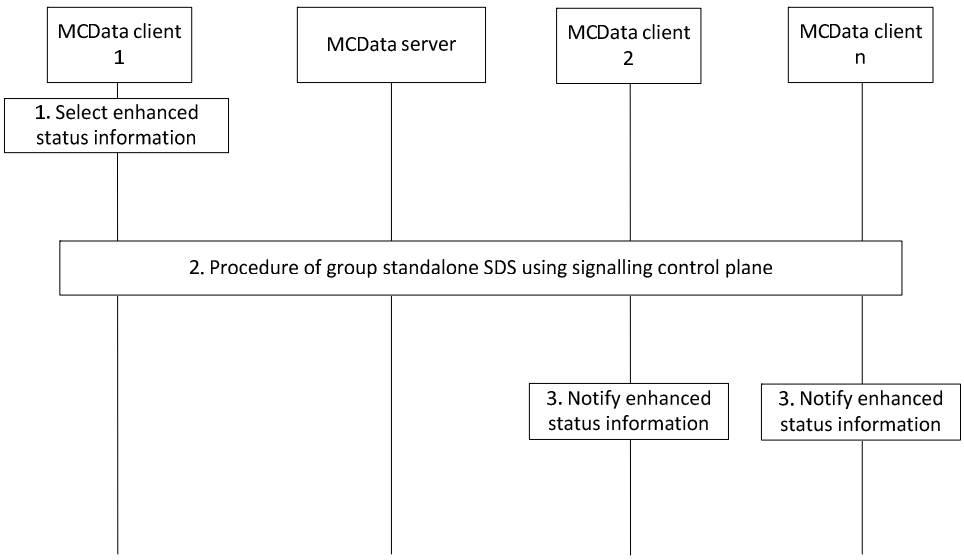

Figure 7.9.3.1.1-1: Sharing enhanced status information

1. The user at MCData client 1 selects the MCData group to share the enhanced status information. The user also selects the value of the status information to be shared from the list of pre-configured status values available for the MCData group.

2. The procedure of group standalone SDS using signalling control plane as described in subclause 7.4.2.2, is used to deliver the enhanced status information.

3. The MCData users at MCData client 2 and n are notified of the enhanced status information.

7.9.4 Enhanced status for off-network

7.9.4.1 Sharing enhanced status information

7.9.4.1.1 Procedure

The procedure for an MCData user to share the enhanced status information to the members of the selected group is illustrated in figure 7.9.4.1.1-1.

Pre-conditions:

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

2. MCData client 1, 2 and n are members of the same MCData group.

3. The MCData group is pre-configured with the possible values for enhanced status information.

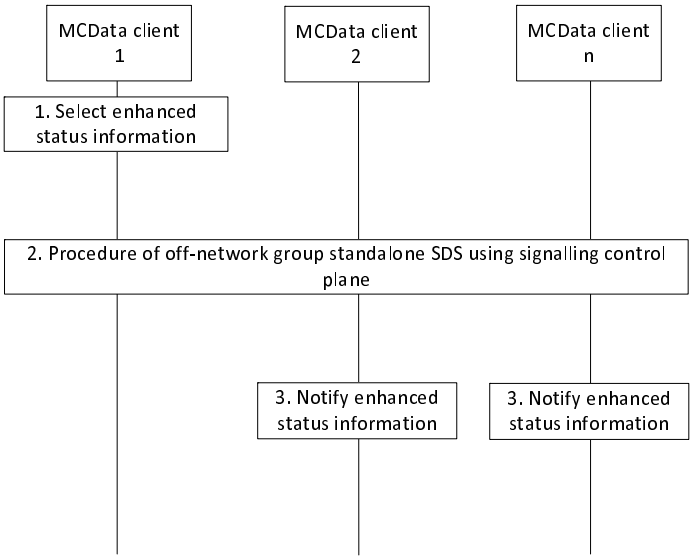

Figure 7.9.4.1.1-1: Sharing enhanced status information

1. The user at MCData client 1 selects the MCData group to share the enhanced status information. The user also selects the value of the status information to be shared from the list of pre-configured status values available for the MCData group.

2. The procedure of off-network group standalone SDS using signalling control plane as described in subclause 7.4.3.3, is used to deliver the enhanced status information.

3. The MCData users at MCData client 2 and n are notified of the enhanced status information.

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

The MCData service shall support the procedures and related information flows as specified in subclause 10.10 of 3GPP TS 23.280 [5] with the following clarifications:

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

7.11 User authentication and authorization for MCData service

NOTE: Flow 7.11-1 is a high level user authentication and authorization flow. 3GPP TS 33.179 [13] defines the specific user authentication and authorization architecture required by the MCData service in order to realize the MCData user authentication and authorization requirements as defined in 3GPP TS 22.280 [2].

A procedure for user authentication is illustrated in figure 7.11-1. The user authentication is performed based on the procedure specified in subclause 10.6 of 3GPP TS 23.280[5].

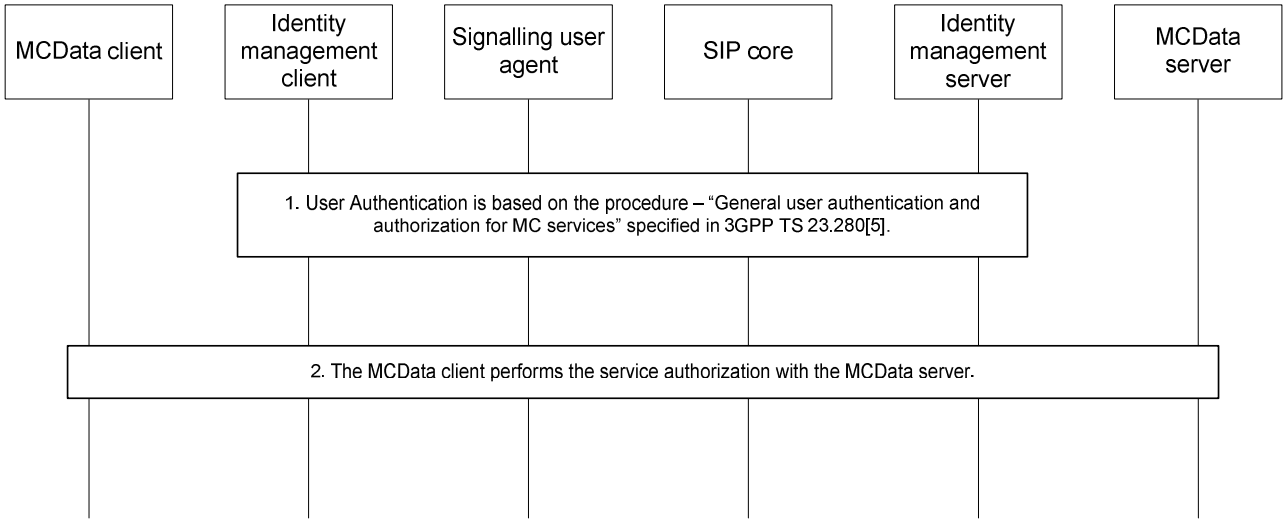

Figure 7.11-1: MCData user authentication and registration, single domain

1. The user authentication is performed as per the general user authentication procedure specified in subclause 10.6 of 3GPP TS 23.280[5].
2. MCData client performs the MCData service authorization for the user. Step 2 utilizes the results of step 1.

Annex A (normative): MCData related configuration data

A.1 General

This Annex provides information about the static data needed for configuration for the MCData service, which belongs to one of the following categories:

- MCData UE configuration data (see subclause A.2);
- MCData user profile configuration data (see subclause A.3);
- MCData related group configuration data (see subclause A.4); and
- MCData service configuration data (see subclause A.5).

For each configuration category, data is split between configuration data that is applicable to both on network and off network, configuration data that is applicable to on-network only, and configuration data that is applicable to off-network only. The configuration data in each configuration category corresponds to a single instance of the category type i.e. the MCData UE, MCData group, MCData user and MCData service configuration data refers to the information that will be stored against each MCData UE, MCData group, MCData user and MCData service. This means that the three separate tables (on-network and off-network, on-network only, off-network only) for each configuration category represent the complete set of data for each configuration data category element.

The columns in the tables have the following meanings:

- Reference: the reference of the corresponding requirement in 3GPP TS 22.282 [3] or 3GPP TS 22.280 [2] or the corresponding subclause from either the present document or the referenced document.
- Parameter description: A short definition of the semantics of the corresponding item of data, including denotation of the level of the parameter in the configuration hierarchy.
    - When it is not clear to which functional entities the parameter is configured, then one or more columns indicating this are provided where the following nomenclature is used:
    - "Y" to denote "Yes" i.e. the parameter denoted for the row needs to be configured to the functional entity denoted for the column.
    - "N" to denote "No" i.e. the parameter denoted for the row does not need to be configured to the functional entity denoted for the column.

Parameters within a set of configuration data have a level within a hierarchy that pertains only to that configuration data. The hierarchy of the configuration data is common across all three tables of on-network and off-network, on network only and off network only. The level of a parameter within the hierarchy of the configuration data is denoted by use of the character ">" in the parameter description field within each table, one per level. Parameters that are at the top most level within the hierarchy have no ">" character. Parameters that have one or more ">" characters are child parameters of the first parameter above them that has one less ">" character. Parent parameters are parameters that have one or more child parameters. Parent parameters act solely as a "grouping" of their child parameters and therefore do not contain an actual value themselves i.e. they are just containers for their child parameters.

Each parameter that can be configured online shall only be configured through one online reference point. Each parameter that can be configured offline shall only be configured through one offline reference point. The most recent configuration data made available to the MCData UE shall always overwrite previous configuration data, irrespective of whether the configuration data was provided via the online or offline mechanism.

A.2 MCData UE configuration data

The general aspects of UE configuration are specified in 3GPP TS 23.280 [5]. Data in tables A.2-1 and A.2-2 have to be known by the MCData UE after MCData authorization.

Data in table A.2-1 can be configured offline using the CSC-11 reference point. Table A.2-1 contains the UE configuration required to support the use of off-network MCData service.

Table A.2-1: UE configuration data (on and off network)

Reference	Parameter description
	Short data service
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous SDS transactions (Nc4)
[R-5.4.2-004] of 3GPP TS 22.280 [2]	> Requested presentation priority of SDS messages received (see NOTE)
	File distribution
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous file distribution transactions (Nc4)
[R-5.4.2-004] of 3GPP TS 22.280 [2]	> Requested presentation priority of files received
	Conversation management
[R-5.4.2-004] of 3GPP TS 22.280 [2]	> Requested presentation priority of conversations
	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
[R-5.4.2-004] of 3GPP TS 22.280 [2]	> Requested presentation priority of data received
	Reception control
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous data receptions (Nc4)
[R-5.4.2-003] of 3GPP TS 22.280 [2]	> Maximum number of data receptions (Nc5) in a group
NOTE: Priority of SDS messages includes enhanced status updates, since enhanced status updates utilise the SDS mechanism.	

Table A.2-2: UE configuration data (on network)

Reference	Parameter description
Subclause 5.2.3 of 3GPP TS 23.280 [6]	Relay service (Y/N)
Subclause 5.2.3 of 3GPP TS 23.280 [6]	List of allowed relayed MCData groups and their relay service code (as specified in 3GPP TS 23.303 [7]) (optional) (see NOTE)
	> MCData group ID
	> Relay service code (as specified in 3GPP TS 23.303 [7])
Subclause 5.7 of 3GPP TS 23.280 [6]	Indication of whether the UE shall use IPv4 or IPv6 for on-network MCData
NOTE: When the value of the parameter Relay service is N, this parameter and its child parameters are not needed.	

A.3 MCData user profile configuration data

The general aspects of MC service user profile configuration data are specified in 3GPP TS 23.280 [5]. The MCData user profile configuration data is stored in the MCData user database. The MCData server obtains the MCData user profile configuration data from the MCData user database (MCData-2).

Tables A.3-1 and A.3-2 contain the MCData user profile configuration required to support the use of on-network MCData service. Tables A.3-1 and A.3-3 contain the MCData user profile configuration required to support the use of off-network MCData service. Data in table A.3-1 and A.3-3 can be configured offline using the CSC-11 reference point.

Table A.3-1: MCData user profile configuration data (on and off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server	MCData user database
Subclause 5.2.11 of 3GPP TS 23.280 [5]	MCData identity (MCData ID)	Y	Y	Y	Y
3GPP TS 33.180 [13]	KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
Subclause 5.2.11 of 3GPP TS 23.280 [5]	Pre-selected MCData user profile indication (see NOTE 2)	Y	Y	Y	Y
Subclause 5.2.11 of 3GPP TS 23.280 [5]	MCData user profile index	Y	Y	Y	Y
Subclause 5.2.11 of 3GPP TS 23.280 [5]	MCData user profile name	Y	Y	Y	Y
[R-5.17-007], [R-6.13.4-002] of 3GPP TS 22.280 [2]	User profile status (enabled/disabled)		Y	Y	Y
[R-5.7-001], [R-6.9-003] of 3GPP TS 22.280 [2]	Authorised to create and delete aliases of an MCData user and its associated user profiles.			Y	Y
[R-5.7-002], [R-6.9-003] of 3GPP TS 22.280 [2]	Alphanumeric aliases of user	Y	Y	Y	Y
[R-5.1.1-005], [R-5.9-001] of 3GPP TS 22.280 [2]	Participant type of the user	Y	Y	Y	Y
[R-5.1.8-006], [R-5.3-002], [R-5.9-001], [R-5.16.2-001], [R-5.16.2-002] of 3GPP TS 22.280 [2]	User's Mission Critical Organization (i.e. which organization a user belongs to)	Y	Y	Y	Y
[R-5.2.2-003] of 3GPP TS 22.280 [2]	Authorisation to create a group-broadcast group			Y	Y
[R-5.2.2-003] of 3GPP TS 22.280 [2]	Authorisation to create a user-broadcast group			Y	Y
[R-5.6.2.4.1-002] of 3GPP TS 22.280 [2]	Authorised to activate MCData emergency alert	Y	Y	Y	Y
[R-5.6.2.4.1-004] [R-5.6.2.4.1-008] [R-5.6.2.4.1-012] of 3GPP TS 22.280 [2]	Group / user recipient of an MCData emergency alert (Pre-defined group, currently selected group, pre-defined recipient/ user locally defined recipient/ default if no recipient selected)	Y	Y	Y	Y
[R-5.6.2.4.2-002] of 3GPP TS 22.280 [2]	Authorisation to cancel an MCData emergency alert	Y	Y	Y	Y
	One-to-one communication				
[R-6.3.1.2-007] of 3GPP TS 22.282 [3] and 3GPP TS 33.180 [13]	> List of MCData users this MCData user is authorized to initiate a one-to-one communication				
	>> MCData ID	Y	N	Y	Y
	>> Discovery Group ID	Y	N	Y	Y
	>> User info ID (as specified in 3GPP TS 23.303 [7])	Y	N	Y	Y

	>> KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
	File distribution				
[R-5.3.2-010] of 3GPP TS 22.282 [3] and 3GPP TS 33.180 [13]	> List of MCData users this MCData user is allowed to cancel distribution of files being sent or waiting to be sent				
	>> MCData ID	Y	Y	Y	Y
	>> KMSUri for security domain of MCData ID (see NOTE 1)	Y	Y	Y	Y
	Transmission and reception control				
[R-6.2.2.1-001] of 3GPP TS 22.282 [3]	> Whether the MCData user is permitted to transmit data	Y	Y	Y	Y
[R-6.2.3-005] of 3GPP TS 22.282 [3]	> Maximum amount of data that the MCData user can transmit in a single request during one-to-one communication	Y	Y	Y	Y
[R-6.2.3-005] and [R-6.3.1.2-008] of 3GPP TS 22.282 [3]	> Maximum amount of time that the MCData user can transmit in a single request during one-to-one communication	Y	Y	Y	Y
[R-6.2.3-001] of 3GPP TS 22.282 [3]	> List of MCData users this MCData user is allowed to request the release of an ongoing transmission that this MCData user is participating in				
	>> MCData ID	Y	Y	Y	Y
NOTE 1: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5]. NOTE 2: As specified in 3GPP TS 23.280 [5], for each MCData user's set of MCData user profiles, only one MCData user profile shall be indicated as being the pre-selected MCData user profile.					

Table A.3-2: MCData user profile configuration data (on network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server	MCData user database
[R-5.1.5-001], [R-5.1.5-002], [R-5.10-001], [R-6.4.7-002], [R-6.8.1-008], [R-6.7.4-002] of 3GPP TS 22.280 [2]	List of on-network MCData groups for use by an MCData user				
	> MCData Group ID	Y	Y	Y	Y
	> 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	Y	Y	Y
	> Presentation priority of the group relative to other groups and users (see NOTE 3)	Y	Y	Y	Y
Subclause 5.2.5 of 3GPP TS 23.280 [5]	List of groups user implicitly affiliates to after MCData service authorization for the user				
	> MCData Group ID	Y	Y	Y	Y
[R-6.4.2-006] of 3GPP TS 22.280 [2]	Authorisation of an MCData user to request a list of which MCData groups a user has affiliated to		Y	Y	Y
[R-6.4.6.1-002], [R-6.4.6.1-003] of 3GPP TS 22.280 [2]	Authorisation to change affiliated groups of other specified user(s)		Y	Y	Y
[R-6.4.6.2-001], [R-6.4.6.2-002] of 3GPP TS 22.280 [2]	Authorisation to recommend to specified user(s) to affiliate to specific group(s)		Y	Y	Y
[R-6.6.1-004] of 3GPP TS 22.280 [2]	Authorisation to perform regrouping	Y	Y	Y	Y
[R-6.7.2-001] of 3GPP TS 22.280 [2]	Presence status is available/not available to other users	Y	Y	Y	Y
[R-6.7.1-002], [R-6.7.2-002] of 3GPP TS 22.280 [2]	List of MCData users that MCData user is authorised to obtain presence of				
	> MCData IDs	Y	Y	Y	Y
[R-6.8.7.4.2-001], [R-6.8.7.4.2-002] of 3GPP TS 22.280 [2]	Authorisation of a user to cancel an emergency alert on any MCData UE of any user		Y	Y	Y
[R-6.13.4-001] of 3GPP TS 22.280 [2]	Authorisation for an MCData user to enable/disable an MCData user		Y	Y	Y
[R-6.13.4-003], [R-6.13.4-005], [R-6.13.4-006], [R-6.13.4-007] of 3GPP TS 22.280 [2]	Authorisation for an MCData user to (permanently /temporarily) enable/disable a UE		Y	Y	Y
[R-7.14-002], [R-7.14-003] of 3GPP TS 22.280 [2]	Authorization for manual switch to off-network while in on-network	Y	Y	Y	Y
[R-5.1.5-004] of 3GPP TS 22.280 [2]	Limitation of number of affiliations per user (N2)	N	Y	Y	Y
[R-6.4.6.1-001], [R-6.4.6.1-004] of 3GPP TS 22.280 [2]	List of MCData users whose selected groups are authorized to be remotely changed	Y	Y	Y	Y

	Conversation management				
[R-6.1.1.2-005], [R-6.1.1.2-006], [R-6.1.1.2-007] of 3GPP TS 22.282 [3]	> List of conversation hang times for MCData groups				
	>> MCData Group ID	Y	Y	Y	Y
	>> Hang time	Y	Y	Y	Y
[R-6.1.1.2-009] of 3GPP TS 22.282 [3].	> List of MCData users to be sent message delivered disposition notifications in addition to the message sender	N	Y	Y	Y
[R-6.1.1.2-009] of 3GPP TS 22.282 [3].	> List of MCData users to be sent message read disposition notifications in addition to the message sender	N	Y	Y	Y
NOTE 1: If this parameter is not configured, authorization to use the group shall be obtained from the identity management server identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of TS 23.280 [5]. NOTE 2: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5]. NOTE 3: The use of this parameter by the MCData UE is outside the scope of the present document.					

Table A.3-3: MCData user profile configuration data (off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server	MCData user database
[R-7.2-003], [R-7.6-004] of 3GPP TS 22.280 [2]	List of off-network MCData groups for use by this MCData user				
	> MCData Group ID	Y	N	Y	Y
	> 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 10.7.2	User info ID (as specified in 3GPP TS 23.303 [7])	Y	N	Y	Y
NOTE 1: If this parameter is not configured, authorization to use the group shall be obtained from the identity management server identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of TS 23.280 [5]. NOTE 2: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5]. NOTE 3: The use of this parameter by the MCData UE is outside the scope of the present document.					

A.4 MCData related Group configuration data

The general aspects of group configuration are specified in 3GPP TS 23.280 [5].

Parameters specified in table A.4-1 are child parameters of the "MCData configuration" parameter specified in table A.4-1 in 3GPP TS 23.280 [5]. Parameters specified in table A.4-2 are child parameters of the "MCData configuration" parameter specified in table A.4-2 in 3GPP TS 23.280 [5]. Parameters specified in table A.4-3 are child parameters of the "MCData configuration" parameter specified in table A.4-3 in 3GPP TS 23.280 [5].

Editor's note: Further contents of this configuration data are FFS.

Table A.4-1: Group configuration data (on and off network)

Reference	Parameter description	MCData UE	MCData Server	Group management server
[R-5.12-001] of 3GPP TS 22.280 [2]	>> Media confidentiality and integrity protection (see NOTE)	Y	Y	Y
[R-5.12-001] of 3GPP TS 22.280 [2]	>> Transmission control confidentiality and integrity protection (see NOTE)	Y	Y	Y
[R-5.12-001] of 3GPP TS 22.280 [2]	>> Group media protection security material (see NOTE)	Y	N	Y
Subclause 5	>> MCData sub-services and features enabled for the group			
	>>> Short data service enabled	Y	Y	Y
	>>> File distribution enabled	Y	Y	Y
	>>> Conversation management enabled	Y	Y	Y
	>>> Transmission control enabled	Y	Y	Y
	>>> Reception control enabled	Y	Y	Y
	>>> Enhanced status enabled	Y	Y	Y
	>> Transmission and reception control			
[R-6.2.2.1-001] of 3GPP TS 22.282 [3]	>>> Whether the MCData user is permitted to transmit data in the group	Y	Y	Y
[R-6.2.3-006] of 3GPP TS 22.282 [3]	>>> Maximum amount of data that the MCData user can transmit in a single request during group communication	Y	Y	Y
[R-6.2.3-006] of 3GPP TS 22.282 [3]	>>> Maximum amount of time that the MCData user can transmit in a single request during group communication	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
NOTE: Security mechanisms are specified in 3GPP TS 33.180 [13].				

Table A.4-2: Group configuration data (on network)

Reference	Parameter description	MCData UE	MCData Server	Group management server
[R-6.4.5-001], [R-6.4.5-003] of 3GPP TS 22.280 [2]	>> Authorisation of a user to request a list of affiliated members of a group	Y	Y	Y
[R-5.1.7-002], [R-6.2.2-001], [R-6.6.2.2-006], [R-6.8.7.2-003] of 3GPP TS 22.280 [2]	>> Priority of the group	N	Y	Y
	>> Transmission and reception control			
	>>> Maximum data size for SDS	Y	Y	Y
	>>> Maximum data size for FD	Y	Y	Y
[R-6.2.2.1-003]	>>> Maximum data size for auto-receive	Y	Y	Y

Table A.4-3: Group configuration data (off network)

Reference	Parameter description	MCData UE	MCData Server	Group management server
Subclause 10.10 of 3GPP TS 23.280 [5]	>> Default ProSe Per-Packet priority (as specified in 3GPP TS 23.303 [7]) values			
	>>> MCData group call signalling	Y	N	Y
	>>> MCData group call media	Y	N	Y

A.5 MCData service configuration data

The general aspects of MC service configuration are specified in 3GPP TS 23.280 [5]. The MCData service configuration data is stored in the MCData server.

Tables A.5-1 and A.5-2 describe the configuration data required to support the use of on-network MCData service. Tables A.5-1 and A.5-3 describe the configuration data required to support the use of off-network MCData service. Data in tables A.5-1 and A.5-3 can be configured offline using the CSC-11 reference point.

Table A.5-1: MCData service configuration data (on and off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server
	Transmission and reception control			
[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	Y	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	Y	Y	Y

Table A.5-2: MCData service configuration data (on network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server
	Transmission and reception control			
	> Maximum data size for SDS	Y	Y	Y
	> Maximum data size for FD	Y	Y	Y
[R-6.2.2.1-002b]	> Maximum data size for auto-receive	Y	Y	Y

Table A.5-3: MCData service configuration data (off network)

Reference	Parameter description	MCData UE	MCData Server	Configuration management server
Subclause 10.10 of 3GPP TS 23.280 [5]	Default ProSe Per-Packet priority (as specified in 3GPP TS 23.303 [7]) values			
	> MCData one-to-one call signalling	Y	N	Y
	> MCData one-to-one call media	Y	N	Y

Annex B (informative): Transmission control for MCData

B.1 Overview of transmission control process

The MCData server may receive several simultaneous requests for data transmission, which may be associated with different types of communication e.g. group, private, 1-to-many. For each communication, the how the requests are processed may be different. The requests that are not authorized shall be rejected by the transmission control function. For auto-send requests, the processing should be immediate and is delivered to the recipients either via unicast or broadcast. However, for requests exceeding the auto-send limits, transmission control arbitration (see Annex B.2) will be necessary. Subsequent to transmission control arbitration, and subject to the policy e.g. store and forward, the data is either delivered directly to the recipient MCData user, or stored in the network repository and a corresponding URL is delivered. The end-to-end transmission control process is illustrated in figure B.1-1.

Editor's Note: The aspects related to data streaming and accuracy of the process is FFS.

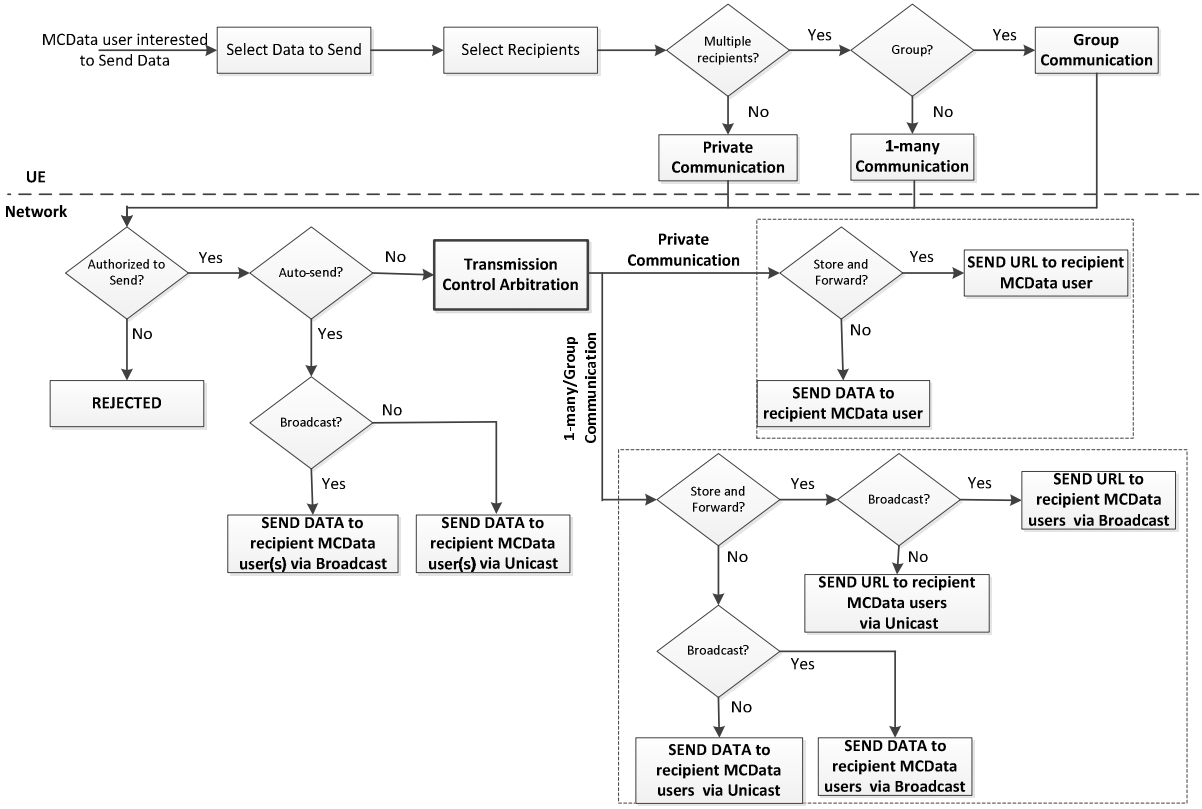

Figure B.1-1: Transmission control process

B.2 Transmission control arbitration

The transmission control arbitration is a central function of transmission control process. 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.

Editor's Note: The queue categories and the order of the queues is FFS.

Annex C (informative): Secure IP connectivity requirements

This annex contains a description of how mission critical organisation may use existing 3GPP solutions to provide a data connection at a fixed defined quality of service level.

Editor's note: For R14 there is no normative work for MCData secure IP connectivity. Further study in R15 will investigate how to complete compliance with the stage 1 requirements including incoming setup to a UE, UE to UE connection and MCData service control of access.

An MCData service IP data access APN is configured to provide connectivity to reach the required PDN within the MC service provider's control with a defined level of quality of service as defined by QCI and ARP. In some instances, the use of the APN will be sufficient to provide the required security for the connection. If that is not the case, the MC service provider may use available techniques to further secure parts of the connection through the EPC.

The MCData UE is configured with security policy to identify which IP data traffic is required to use the MCData service IP data access APN.

When the MCData UE requires to access an application to be used with the additional level of security, the local application within the MCData UE commences access. If the policy allows use of the MCData service IP data access APN, then the MCData UE establishes connection to the required end point via the PDN provided for the MC service IP data access.

End to end security is established as required by the local application in the UE and the remote application in the network.

Annex D (informative): Change history

Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2016-07						Initial version.	0.0.0
2016-08						Update following SA6#12 incorporating the following pCRs: S6-160810; S6-160875; S6-160876	0.1.0
2016-10						Update following SA6#13 incorporating the following pCRs: S6-161169; S6-161170; S6-161243; S6-161265; S6-161085; S6-161173; S6-161174; S6-161245; S6-161176; S6-161248; S6-161177; S6-161178; S6-161266; S6-161267; S6-161184	0.2.0
2016-11						Update following SA6#14 incorporating the following pCRs: S6-161316; S6-161586; S6-161609; S6-161587; S6-161589; S6-161506; S6-161576; S6-161507; S6-161326; S6-161508; S6-161577; S6-161511; S6-161512; S6-161616; S6-161514; S6-161515; S6-161516; S6-161580; S6-161581; S6-161519; S6-161498; S6-161642	0.3.0
2016-11	SA#74	SP-160878				Submitted for Approval at SA#74	1.0.0
2016-12	SA#74	SP-160878				MCC Editorial update for publication after TSG SA approval (SA#74)	14.0.0
2017-03	SA#75	SP-170071	0002	2	F	Alignment of definitions	14.1.0
2017-03	SA#75	SP-170071	0003	2	F	Alignment of group affiliation and de-affiliation requirements	14.1.0
2017-03	SA#75	SP-170071	0004	1	F	Alignment of bearer management	14.1.0
2017-03	SA#75	SP-170071	0005	2	D	Adding descriptive text for the FD procedure section	14.1.0
2017-03	SA#75	SP-170071	0006	2	D	Resolving editor's notes for the short data service feature	14.1.0
2017-03	SA#75	SP-170071	0007	1	D	Adding references for the signalling control plane	14.1.0
2017-03	SA#75	SP-170071	0008	2	D	Adding descriptive text for the transmission and reception control section	14.1.0
2017-03	SA#75	SP-170071	0009		F	MCData correction of reference	14.1.0
2017-03	SA#75	SP-170071	0010		F	Alignment of business relationships, identities, and application of functional model to deployments	14.1.0
2017-03	SA#75	SP-170071	0011	3	F	file download editorials	14.1.0
2017-03	SA#75	SP-170071	0013	1	F	Off-network conversation management	14.1.0
2017-03	SA#75	SP-170071	0014	1	D	Editorial corrections	14.1.0
2017-03	SA#75	SP-170071	0015	1	F	Resolving EN in Scope	14.1.0
2017-03	SA#75	SP-170071	0016	5	F	Resolving EN in Functional model	14.1.0
2017-03	SA#75	SP-170071	0017	1	F	Resolving EN in SDS procedures	14.1.0
2017-03	SA#75	SP-170071	0018		F	Referring generic procedures from CFA	14.1.0
2017-03	SA#75	SP-170071	0020	2	F	Conversation management definitions	14.1.0
2017-03	SA#75	SP-170071	0021	2	F	Disposition alignments and corrections in SDS and FD	14.1.0
2017-03	SA#75	SP-170071	0022	1	F	Tx and Rx control procedure corrections	14.1.0
2017-03	SA#75	SP-170071	0025	1	F	MCData functional model alignment	14.1.0
2017-03	SA#75	SP-170071	0027	1	F	Moving configuration data to on-network only	14.1.0
2017-03	SA#75	SP-170071	0028	3	F	Resolve SDS on-network information flows EN	14.1.0
2017-03	SA#75	SP-170071	0030	1	F	Resolve FD information flows EN	14.1.0
2017-03	SA#75	SP-170071	0031	2	F	Adding end-to-end encryption requirements	14.1.0
2017-03	SA#75	SP-170071	0032	1	F	Resolve transmission control information flows EN	14.1.0
2017-03	SA#75	SP-170071	0033	2	F	Resolve conversation management EN	14.1.0
2017-03	SA#75	SP-170071	0034	1	F	Addition of definition for MCData ID	14.1.0
2017-03	SA#75	SP-170071	0035		F	Addition of definition for MCData ID	14.1.0
2017-03	SA#75	SP-170071	0036	3	F	Off-network information flows for SDS	14.1.0
2017-03	SA#75	SP-170071	0037	1	F	Resolve communication release information flows EN	14.1.0
2017-03	SA#75	SP-170071	0038	1	F	Conditions for using SDS media plane	14.1.0
2017-06	SA#76	SP-170392	0039	2	F	Correction on MCData reference points when using MBMS	14.2.0
2017-06	SA#76	SP-170392	0048		D	Additions to Definition and Abbreviations	14.2.0
2017-06	SA#76	SP-170392	0049	2	F	Clarifications to section 5 Arcitecture requirements	14.2.0
2017-06	SA#76	SP-170392	0051	1	F	Clarifications to section 6.5.1 that SDS Distribution function in MCData server talks to SDS function in MCData client not UE	14.2.0
2017-06	SA#76	SP-170392	0052		F	Clarifications to section 6.5.3.1.2	14.2.0
2017-06	SA#76	SP-170392	0054	1	D	Correct wrong reference in section 7.2	14.2.0
2017-06	SA#76	SP-170392	0056	3	F	Correct the MCData data disposition notification IEs	14.2.0
2017-06	SA#76	SP-170392	0058	1	D	Consistent use of pre-condition in section 7.4.2.2.2	14.2.0
2017-06	SA#76	SP-170392	0059	1	F	Inconsistent use of MCData group ID or list of recipients in request	14.2.0

2017-06	SA#76	SP-170392	61	3	F	Content reference URL should be a mandatory IE when uploading a file	14.2.0
2017-06	SA#76	SP-170392	62	5	F	Addition of new configuration and miscellaneous corrections	14.2.0
2017-06	SA#76	SP-170392	63	5	F	Addition of identity management server address per group	14.2.0
2017-06	SA#76	SP-170392	64		F	Correction on sending data with mandatory download	14.2.0
2017-06	SA#76	SP-170392	70	2	F	Inclusion of KMSUri to allow multiple security domains	14.2.0
2017-06	SA#76	SP-170392	71	4	F	Clarification to Auto-send	14.2.0
2017-06	SA#76	SP-170392	76		F	Corrections to Group configuration data for all MC services	14.2.0
2017-06	SA#76	SP-170392	78	2	F	CR to 23.282 on Auto-receive	14.2.0

History

Document history		
V14.1.0	May 2017	Publication
V14.2.0	July 2017	Publication