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Contents

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	8
1 Scope	9
2 References	9
3 Definitions, symbols and abbreviations	10
3.1 Definitions	10
3.2 Abbreviations	11
4 Introduction	11
5 Architectural requirements	12
5.1 Transmission control	12
5.2 Reception control	12
5.3 Short Data Service capability	12
5.4 File distribution capability.....	13
5.5 Data streaming capability.....	13
5.6 MCDATA group affiliation and MCDATA group de-affiliation.....	13
5.7 Conversation management	13
5.8 Bearer management.....	14
5.8.1 General.....	14
5.8.2 EPS bearer considerations	14
5.8.3 EPS unicast bearer considerations for MCDATA.....	14
5.8.4 MBMS bearer management	14
5.9 Disposition	14
6 Functional model.....	14
6.1 General	14
6.2 Description of the planes	15
6.3 Transmission and reception control aspects	15
6.3.1 General.....	15
6.4 Generic functional model.....	15
6.4.1 On-network functional model	15
6.4.2 Off-network functional model	15
6.4.3 Functional entities description	15
6.4.3.1 Application plane	16
6.4.3.1.1 MCDATA client	16
6.4.3.1.2 MCDATA server.....	16
6.4.3.1.3 MCDATA user database	16
6.4.3.2 Signalling control plane	17
6.4.4 Reference points	17
6.4.4.1 Application plane	17
6.4.4.1.1 General	17
6.4.4.1.2 Reference point MCDATA-2 (between the MCDATA server and the MCDATA user database)	17
6.4.4.1.3 Reference point MCDATA-3 (between the MCDATA server and the MCDATA server).....	17
6.4.4.1.3A Reference point MCDATA-5 (between the MCDATA capability function and the EPS).....	17
6.4.4.1.4 Reference point MCDATA-6 (between the MCDATA server and the EPS)	17
6.5 Functional model for short data service	17
6.5.1 On-network functional model	17
6.5.2 Off-network functional model	18
6.5.3 Functional entities description	19
6.5.3.1 Application plane	19
6.5.3.1.1 SDS function	19
6.5.3.1.2 SDS distribution function	19
6.5.3.1.3 Transmission/Reception control	19

6.5.3.2	Signalling control plane	19
6.5.4	Reference points	20
6.5.4.1	Application plane	20
6.5.4.1.1	Reference point MCDData-SDS-1 (between the SDS distribution function and the SDS function)	20
6.5.4.1.2	Reference point MCDData-SDS-2 (unicast between the SDS distribution function and the SDS function)	20
6.5.4.1.3	Reference point MCDData-SDS-3 (multicast between the SDS distribution function and the SDS function)	20
6.5.4.2	Signalling control plane	20
6.6	Functional model for file distribution.....	20
6.6.1	On-network functional model	20
6.6.2	Off-network functional model	21
6.6.3	Functional entities description	21
6.6.3.1	Application plane	21
6.6.3.1.1	FD function.....	21
6.6.3.1.2	Media storage client	22
6.6.3.1.3	Transmission/Reception control	22
6.6.3.1.4	Media storage function	22
6.6.3.2	Signalling control plane	22
6.6.4	Reference points	22
6.6.4.1	Application plane	22
6.6.4.1.1	Reference point MCDData-FD-1 (between the FD functions of the MCDData client and the MCDData server)	22
6.6.4.1.2	Reference point MCDData-FD-2 (unicast between the FD functions of the MCDData client and the MCDData server)	22
6.6.4.1.3	Reference point MCDData-FD-3 (multicast between the FD functions of the MCDData client and the MCDData server).....	23
6.6.4.1.4	Reference point MCDData-FD-4 (media storage function and media storage client).....	23
6.6.4.2	Signalling control plane	23
6.7	Functional model for data streaming	23
6.7.1	On-network functional model	23
6.7.2	Off-network functional model	24
6.7.3	Functional entities description	24
6.7.3.1	Application plane	24
6.7.3.1.1	DS function.....	24
6.7.3.1.2	Data streaming and distribution function.....	24
6.7.3.1.3	Transmission/Reception control	24
6.7.3.2	Signalling control plane	24
6.7.4	Reference points	24
6.7.4.1	Application plane	24
6.7.4.1.1	Reference point MCDData-DS-1 (between the data streaming and distribution function and the DS function)	24
6.7.4.1.2	Reference point MCDData-DS-2 (unicast between the data streaming and distribution function and the DS function).....	25
6.7.4.1.3	Reference point MCDData-DS-3 (multicast between the data streaming and distribution function and the DS function)	25
6.7.4.2	Signalling control plane	25
7	Procedures and information flows.....	25
7.1	MCDData service configuration	25
7.2	Affiliation and de-affiliation to/from MCDData group(s).....	26
7.3	Use of MBMS transmission (on-network)	26
7.3.1	Information flows for MBMS Transmission	26
7.3.2	Use of pre-established MBMS bearers	26
7.3.3	Use of dynamic MBMS bearer establishment	26
7.3.4	Switching from MBMS bearer to unicast bearer	27
7.4	Short data service	27
7.4.1	General.....	27
7.4.2	Short data service for on-network.....	27
7.4.2.1	Information flows for short data service	27
7.4.2.1.1	MCDData standalone data request	27

7.4.2.1.2	MCDATA data disposition notification	28
7.4.2.1.3	MCDATA standalone session data request	28
7.4.2.1.4	MCDATA standalone session data response	28
7.4.2.1.5	MCDATA session data request	29
7.4.2.1.6	MCDATA session data response	29
7.4.2.1.7	MCDATA group standalone data request (MCDATA client – MCDATA server).....	29
7.4.2.1.8	MCDATA group standalone data request (MCDATA server – MCDATA client)	30
7.4.2.1.9	MCDATA data disposition notification(s) (MCDATA server – MCDATA client)	30
7.4.2.1.10	MCDATA group session standalone data request (MCDATA client – MCDATA server)	30
7.4.2.1.11	MCDATA group session standalone data request (MCDATA server – MCDATA client)	31
7.4.2.1.12	MCDATA group session standalone data response	31
7.4.2.1.13	MCDATA group data request (MCDATA client – MCDATA server)	31
7.4.2.1.14	MCDATA group data request (MCDATA server – MCDATA client)	32
7.4.2.1.15	MCDATA group data response	32
7.4.2.2	One-to-one standalone short data service using signalling control plane.....	32
7.4.2.2.1	General	32
7.4.2.2.2	Procedure.....	32
7.4.2.3	One-to-one standalone short data service using media plane.....	34
7.4.2.3.1	General	34
7.4.2.3.2	Procedure.....	34
7.4.2.4	One-to-one short data service session	35
7.4.2.4.1	General	35
7.4.2.4.2	Procedure.....	35
7.4.2.5	Group standalone short data service using signalling control plane.....	37
7.4.2.5.1	General	37
7.4.2.5.2	Procedure.....	37
7.4.2.6	Group standalone short data service using media plane.....	38
7.4.2.6.1	General	38
7.4.2.6.2	Procedure.....	38
7.4.2.7	Group short data service session	40
7.4.2.7.1	General	40
7.4.2.7.2	Procedure.....	40
7.4.3	Short data service for off-network	42
7.4.3.1	General	42
7.4.3.2	Information flows for short data service	42
7.4.3.2.1	MCDATA standalone data request	42
7.4.3.2.2	MCDATA data disposition notification.....	42
7.4.3.2.3	MCDATA group standalone data request.....	42
7.4.3.3	One-to-one standalone short data service using signalling control plane.....	43
7.4.3.3.1	General	43
7.4.3.3.2	Procedure.....	43
7.4.3.4	Group standalone short data service using signalling control plane.....	44
7.4.3.4.1	General	44
7.4.3.4.2	Procedure.....	44
7.5	File distribution	45
7.5.1	General.....	45
7.5.2	File distribution for on-network.....	45
7.5.2.1	Information flows for file distribution.....	45
7.5.2.1.1	MCDATA upload data request	45
7.5.2.1.2	MCDATA upload data response	45
7.5.2.1.3	MCDATA download data request	46
7.5.2.1.4	MCDATA download data response	46
7.5.2.1.5	MCDATA FD request (using HTTP).....	46
7.5.2.1.6	MCDATA FD response (using HTTP).....	46
7.5.2.1.7	MCDATA download completed report.....	47
7.5.2.1.8	MCDATA FD request (using media plane)	47
7.5.2.1.9	MCDATA FD response (using media plane).....	47
7.5.2.1.10	MCDATA group standalone FD request (using HTTP)	47
7.5.2.1.11	MCDATA group standalone FD response (using HTTP).....	48
7.5.2.1.12	MCDATA group standalone FD request (using media plane).....	48
7.5.2.1.13	MCDATA group standalone FD response (using media plane).....	48
7.5.2.2	File upload using HTTP	49

7.5.2.2.1	General	49
7.5.2.2.2	Procedure	49
7.5.2.3	File download using HTTP	49
7.5.2.3.1	General	49
7.5.2.3.2	Procedure	49
7.5.2.4	One-to-one file distribution using HTTP	50
7.5.2.4.1	General	50
7.5.2.4.2	Procedure	50
7.5.2.5	One-to-one file distribution using media plane	52
7.5.2.5.1	General	52
7.5.2.5.2	Procedure	52
7.5.2.6	Group standalone file distribution using HTTP	53
7.5.2.6.1	General	53
7.5.2.6.2	Procedure	53
7.5.2.7	Group standalone file distribution using media plane	55
7.5.2.7.1	General	55
7.5.2.7.2	Procedure	55
7.6	Transmission and reception control	56
7.6.1	General	56
7.6.2	Transmission and reception control for on-network	57
7.6.2.1	Information flows for transmission and reception control	57
7.6.2.1.1	MCDData control indication	57
7.6.2.1.2	MCDData indication	57
7.6.2.1.3	MCDData get deferred list request	57
7.6.2.1.4	MCDData get deferred list response	58
7.6.2.2	Automatic transmission for SDS	58
7.6.2.2.1	General	58
7.6.2.2.2	Procedure	58
7.6.2.3	Send data with mandatory download	59
7.6.2.3.1	General	59
7.6.2.3.2	Procedure	59
7.6.2.4	Send data without mandatory download	60
7.6.2.4.1	General	60
7.6.2.4.2	Procedure	60
7.6.2.5	Accessing list of deferred data group communications	61
7.6.2.5.1	General	61
7.6.2.5.2	Procedure	61
7.7	Communication release	62
7.7.1	General	62
7.7.2	Communication release for on-network	62
7.7.2.1	Information flows for communication release	62
7.7.2.1.1	Communication release request (one-to-one communication using media plane)	62
7.7.2.1.2	Communication release response (one-to-one communication using media plane)	62
7.7.2.1.3	Communication release request (group communication using media plane)	63
7.7.2.1.4	Communication release response (group communication using media plane)	63
7.7.2.1.5	Communication release request (communication using HTTP)	63
7.7.2.1.6	Communication release response (communication using HTTP)	63
7.7.2.1.7	Data not available control indication	63
7.7.2.2	MCDData user initiated communication release	64
7.7.2.2.1	General	64
7.7.2.2.2	Release of MCDData communication using media plane	64
7.7.2.2.2.1	General	64
7.7.2.2.2.2	Procedure	64
7.7.2.2.3	Release of MCDData communication using HTTP	65
7.7.2.2.3.1	General	65
7.7.2.2.3.2	Procedure	65
7.7.2.3	MCDData server initiated communication release without prior indication	66
7.7.2.3.1	General	66
7.7.2.3.2	Release of MCDData communication using media plane	66
7.7.2.3.2.1	General	66
7.7.2.3.2.2	Procedure	66
7.7.2.3.3	Release of MCDData communication using HTTP	67

7.7.2.3.3.1	General.....	67
7.7.2.3.3.2	Procedure	68
7.7.2.4	MCDData server initiated communication release with prior indication.....	68
7.7.2.4.1	General	68
7.7.2.4.2	Procedure.....	69
7.7.2.5	Authorized MCDData user initiated communication release without prior indication	70
7.7.2.5.1	General	70
7.7.2.5.2	Procedure.....	70
7.7.2.6	Authorized MCDData user initiated communication release with prior indication	71
7.7.2.6.1	General	71
7.7.2.6.2	Procedure.....	71
7.8	Conversation management	73
7.8.1	General.....	73
7.8.2	Conversation management for on-network.....	73
7.8.2.1	Information flows for conversation management.....	73
7.8.2.2	One-to-one conversation management	73
7.8.2.2.1	Procedure.....	73
7.8.2.3	Group conversation management.....	74
7.8.2.3.1	Procedure.....	74
7.8.3	Conversation management for off-network.....	74
7.8.3.1	One-to-one conversation management	74
7.8.3.1.1	Procedure.....	74
7.8.3.2	Group conversation management.....	75
7.8.3.2.1	Procedure.....	75
7.9	Enhanced status	76
7.9.1	General.....	76
7.9.2	Preset values for enhanced status.....	76
7.9.3	Enhanced status for on-network.....	76
7.9.3.1	Sharing enhanced status information	76
7.9.3.1.1	Procedure.....	76
7.9.4	Enhanced status for off-network.....	77
7.9.4.1	Sharing enhanced status information	77
7.9.4.1.1	Procedure.....	77
7.10	MCDData emergency alert (on-network and off-network)	77
7.11	User authentication and authorization for MCDData service.....	78
Annex A (normative):	MCDData related configuration data	79
A.1	General	79
A.2	MCDData UE configuration data.....	79
A.3	MCDData user profile configuration data.....	80
A.4	MCDData related Group configuration data	87
A.5	MCDData service configuration data.....	89
Annex B (informative):	Transmission control for MCDData	91
B.1	Overview of transmission control process	91
B.2	Transmission control arbitration	91
Annex C (informative):	Secure IP connectivity requirements	92
Annex D (informative):	Change history	93
History		96

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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 MCDData client(s) from the MCDData server i.e. without waiting for the receiving user to indicate a present need for the data.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mission Critical
Mission Critical Applications
Mission Critical Service
Mission Critical Organization

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

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

The MCDData 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 MCDData service.

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

5 Architectural requirements

5.1 Transmission control

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

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

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

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

5.2 Reception control

The MCDData service shall support the ability to receive small amounts of data automatically. The MCDData service may store data waiting for delivery in a temporary store, and notify availability to the receiving MCDData users. 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 MCDData group(s) shall be notified of the list of available data either on request or periodically.

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

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

5.3 Short Data Service capability

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

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

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

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

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

5.4 File distribution capability

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

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

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

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

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

5.5 Data streaming capability

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

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

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

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

The MCDData 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 MCDData group affiliation and MCDData group de-affiliation

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

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

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

5.7 Conversation management

The conversation management:

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

5.8 Bearer management

5.8.1 General

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

5.8.2 EPS bearer considerations

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

5.8.3 EPS unicast bearer considerations for MCDData

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

The UE is required to support at minimum one UM bearer, which is used for MCDData (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 MCDData UE shall use the signalling plane for disposition request and disposition notifications. For session SDS, the MCDData UE shall use:

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

5A Involved business relationships

The description of the involved business relationships for the MCDData 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 MCDData service.

The security solution for the MCDData 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 MCDData 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 MCDData 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.

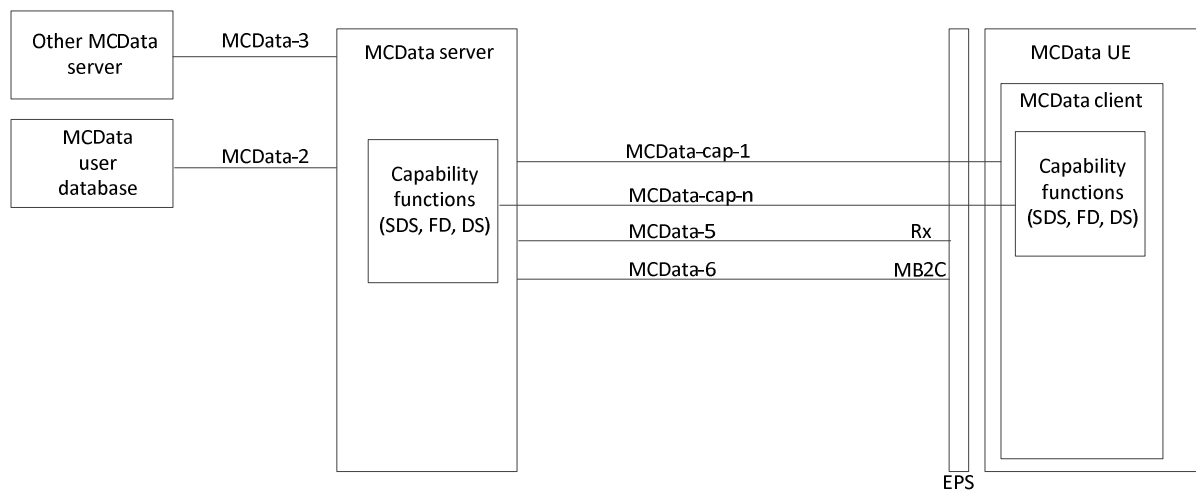


Figure 6.4.1-1: Generic application plane functional model

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

6.4.2 Off-network functional model

6.4.3 Functional entities description

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

6.4.3.1 Application plane

6.4.3.1.1 MCDData client

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

6.4.3.1.2 MCDData server

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

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

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

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

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

The MCDData server performing the controlling role is responsible for:

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

The MCDData server performing the participating role is responsible for:

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

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

6.4.3.1.3 MCDData user database

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

6.4.3.2 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 MCDData service are described in the following subclauses.

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

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

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

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

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

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

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

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

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

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

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

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.

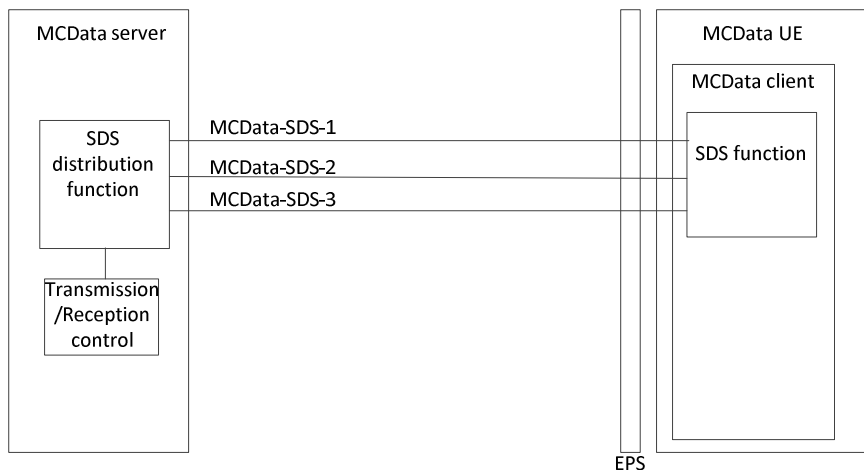


Figure 6.5.1-1: Application plane functional model for SDS

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.

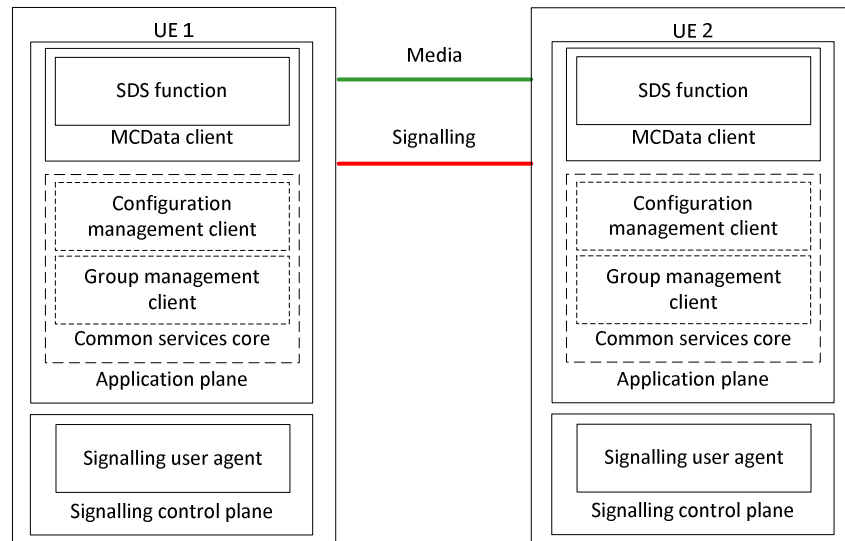


Figure 6.5.2-1: Application plane functional model for SDS

6.5.3 Functional entities description

6.5.3.1 Application plane

6.5.3.1.1 SDS function

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

6.5.3.1.2 SDS distribution function

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

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

6.5.3.1.3 Transmission/Reception control

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

6.5.3.2 Signalling control plane

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

6.5.4 Reference points

6.5.4.1 Application plane

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

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

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

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

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

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

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

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

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

6.5.4.2 Signalling control plane

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

6.6 Functional model for file distribution

6.6.1 On-network functional model

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

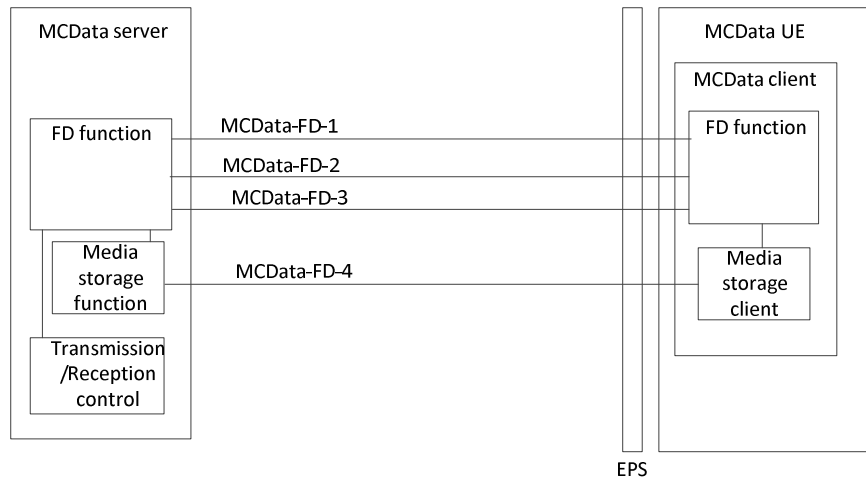


Figure 6.6.1-1: Application plane functional model for file distribution

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

- 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 MCDData client for file distribution capability. FD function of the MCDData client interacts with media storage client for uploading and downloading file to or from the media storage function of the MCDData server.

6.6.3.1.3 Transmission/Reception control

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

6.6.3.1.4 Media storage function

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

6.6.3.2 Signalling control plane

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

6.6.4 Reference points

6.6.4.1 Application plane

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

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

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

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

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

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

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

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

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

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

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

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

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

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

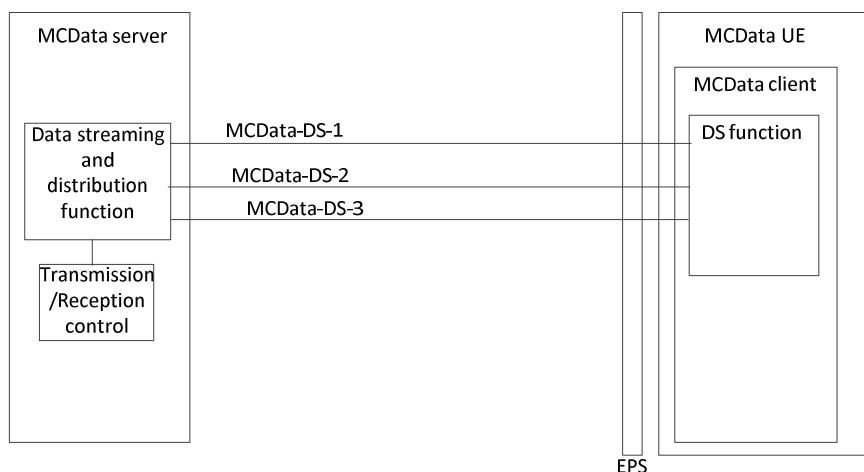


Figure 6.7.1-1: Application plane functional model for data streaming

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

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

- MCDData-DS-3 reference point carries multicast data stream from the data streaming and distribution function of the MCDData server to the DS function of the MCDData 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 MCDData 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 MCDData communication participants. The data streaming and distribution function provides the following functionality:

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

6.7.3.1.3 Transmission/Reception control

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

6.7.3.2 Signalling control plane

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

6.7.4 Reference points

6.7.4.1 Application plane

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

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

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

- metadata of the data being streamed;
- URL of the data being streamed;
- sending stream download report;
- conversation identifier for message thread indication; and

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

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

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

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

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

MCDData-DS-2 supports the following functions:

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

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

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

6.7.4.2 Signalling control plane

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

6A Identities

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

6B Application of functional model to deployments

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

7 Procedures and information flows

7.1 MCDData service configuration

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

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

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

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

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

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

7.3 Use of MBMS transmission (on-network)

7.3.1 Information flows for MBMS Transmission

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

7.3.2 Use of pre-established MBMS bearers

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

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

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

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

Both the media packets as well as 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 MCDData 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 MCDData client;
- The MC service server is the MCDData server; and
- The MC service ID is the MCDData ID.

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

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

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

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

7.4 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 MCDData 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 MCDData user has only one SDS transaction or multiple SDS transactions;
- Whether MCDData user is targeting SDS transaction to another MCDData user or MCDData group;
- Whether MCDData UE is on-network or off-network; and
- Security reasons.

7.4.2 Short data service for on-network

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

7.4.2.1 Information flows for short data service

7.4.2.1.1 MCDData standalone data request

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

Table 7.4.2.1.1-1: MCDData standalone data request

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

7.4.2.1.2 MCDData data disposition notification

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

Table 7.4.2.1.2-1: MCDData data disposition notification

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

7.4.2.1.3 MCDData standalone session data request

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

Table 7.4.2.1.3-1: MCDData standalone session data request

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

7.4.2.1.4 MCDData standalone session data response

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

Table 7.4.2.1.4-1: MCDData standalone session data response

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

7.4.2.1.5 MCDData session data request

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

Table 7.4.2.1.5-1: MCDData session data request

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending data
MCDData ID	M	The identity of the MCDData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCDData user consumption
SDP offer	M	Media parameters offered

7.4.2.1.6 MCDData session data response

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

Table 7.4.2.1.6-1: MCDData session data response

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

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

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending data
MCDData group ID	M	The MCDData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCDData user consumption
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 session standalone data request (MCDATA client – MCDATA server)

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

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

Information element	Status	Description
MCDATA ID	M	The identity of the MCDATA user sending data
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 MCDData group session standalone data request (MCDData server – MCDData client)

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending data
MCDData group ID	M	The MCDData group ID to which the data is to be sent
MCDData ID	M	The identity of the MCDData user towards which the data is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Transaction type	M	Standalone transaction
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCDData user consumption
SDP offer	M	Media parameters offered

7.4.2.1.12 MCDData group session standalone data response

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

Table 7.4.2.1.12-1: MCDData group session standalone data response

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

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

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending data
MCDData group ID	M	The MCDData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCDData user consumption
SDP offer	M	Media parameters offered

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

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending data
MCDData group ID	M	The MCDData group ID to which the data is to be sent
MCDData ID	M	The identity of the recipient MCDData user
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Transaction type	M	Session based transactions
Disposition Type	O	Indicates the disposition type expected from the receiver (i.e., delivered or read or both)
Payload Destination Type	M	Indicates whether the SDS payload is for application consumption or MCDData user consumption
SDP offer	M	Media parameters offered

7.4.2.1.15 MCDData group data response

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

Table 7.4.2.1.15-1: MCDData group data response

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

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

7.4.2.2.1 General

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

7.4.2.2.2 Procedure

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

Pre-conditions:

1. The SDS payload data size is below the configured maximum payload data size for SDS over signalling control plane.
2. MCDData users on MCDData client 1 and MCDData client 2 are already registered for receiving MCDData service.
3. MCDData client 1 and MCDData client 2 belong to the same MCDData system.

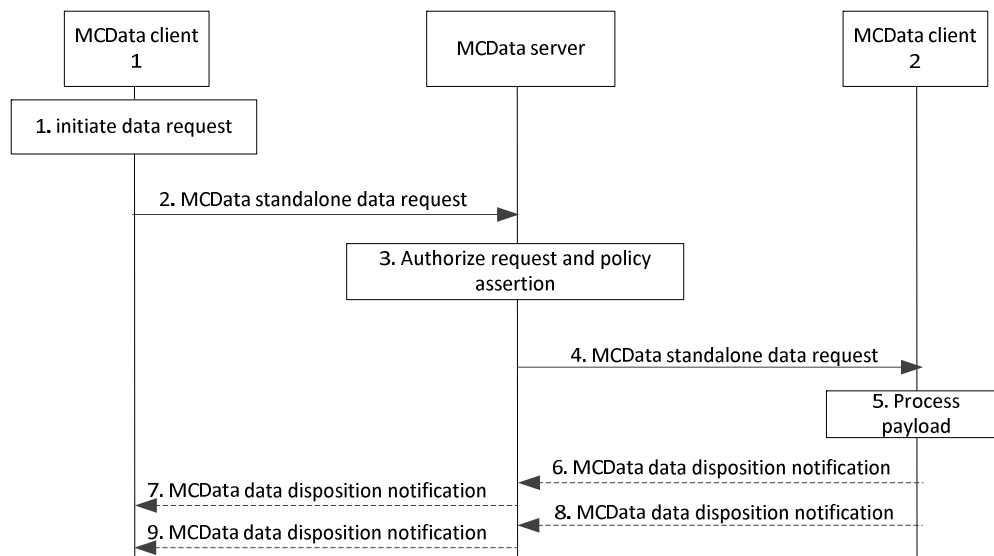


Figure 7.4.2.2.2-1: One-to-one standalone short data service using signalling control plane

1. The user at MCDData client 1 initiates an SDS data transfer for the chosen MCDData user.
2. MCDData client 1 sends a MCDData standalone data request towards the MCDData server. The MCDData standalone data request contains conversation identifier for message thread indication. The MCDData standalone data request may contain disposition request if indicated by the user at MCDData client 1.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData standalone data request. The MCDData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege or affiliation.
4. MCDData server initiates the MCDData standalone data request towards the MCDData user.
5. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData client 2 shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.
6. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client initiates a MCDData data disposition notification for delivery report. The MCDData data disposition notification from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
7. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.
8. If the MCDData data disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData data disposition notification for read report. The MCDData data disposition notification from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users. The MCDData data disposition notification from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
9. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.

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

7.4.2.3.1 General

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

7.4.2.3.2 Procedure

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

Pre-conditions:

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

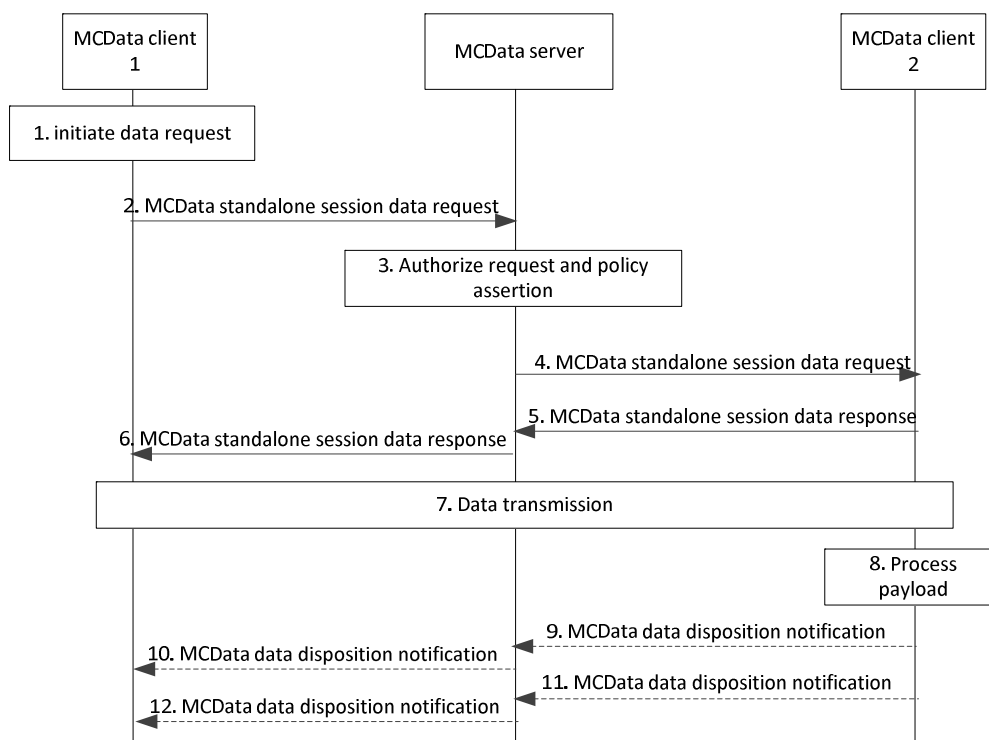


Figure 7.4.2.3.2-1: One-to-one standalone short data service using media plane

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

5. The receiving MCDData client 2 automatically accepts the MCDData standalone session data request and responds with MCDData standalone session data response towards MCDData server.
6. MCDData server forwards the MCDData client 2 accepted response to the MCDData user initiating the MCDData standalone session data request.
7. MCDData client 1 and MCDData client 2 have successfully established media plane for data communication and the MCDData client 1 transmits the SDS data.
8. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData client 2 shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.
9. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client initiates a MCDData data disposition notification for delivery report. The MCDData data disposition notification from the receiving MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
10. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.
11. If the MCDData disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData disposition notification for read report. The MCDData data disposition notification from the receiving MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users.
12. MCDData data disposition notification is sent to the disposition requesting user at MCDData client 1.

7.4.2.4 One-to-one short data service session

7.4.2.4.1 General

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

7.4.2.4.2 Procedure

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

Pre-conditions:

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

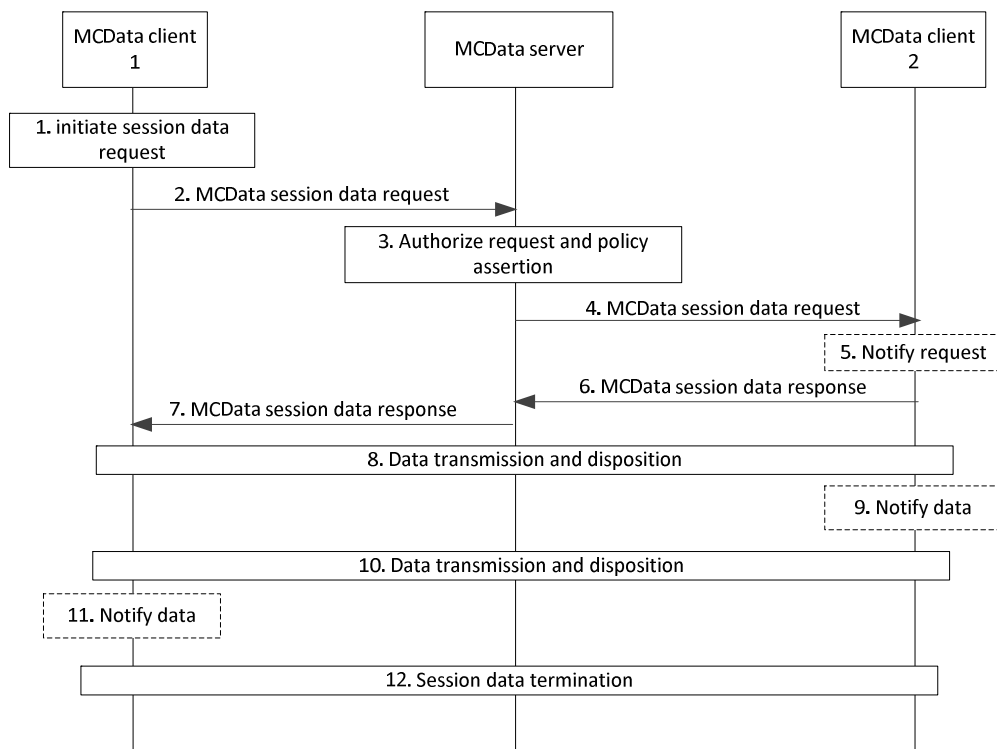


Figure 7.4.2.4.2-1: One-to-one short data service session

1. User at MCDData client 1 would like to initiate a SDS data communication session request for the chosen MCDData user.
2. MCDData client 1 sends a MCDData session data request towards the MCDData server. The MCDData standalone data request contains one MCDData user for one-to-one data communication as selected by the user at MCDData client 1. The MCDData session data request contains conversation identifier for message thread indication.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData session data request. The MCDData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege. MCDData server determines the eligible MCDData user(s) after policy assertion for sending the MCDData session data request.
4. MCDData server initiates the MCDData session data request towards the MCDData user determined.
5. The receiving MCDData client 2 optionally notifies the user about the incoming MCDData session data request.
6. The receiving MCDData client 2 accepts the MCDData session data request and responds with MCDData session data response towards MCDData server.
7. MCDData server forwards the MCDData client 2 accepted response to the MCDData user initiating the MCDData session data request.
8. and 10. MCDData client 1 and MCDData client 2 have successfully established media plane for data communication and either MCDData client can transmit SDS data. The MCDData data request may contain disposition request if indicated by the client sending data. If MCDData data disposition was requested by the user, then the receiving MCDData client initiates a MCDData data disposition notification for delivery, read reports to the disposition requesting user. The MCDData data disposition notification from MCDData user may be stored by the MCDData server for disposition history interrogation from authorized users.
9. and 11. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified, otherwise the MCDData user of MCDData 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 payload data size is assumed to be below the configured maximum payload data size for SDS over signalling control plane.

7.4.2.5.2 Procedure

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

Pre-conditions:

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

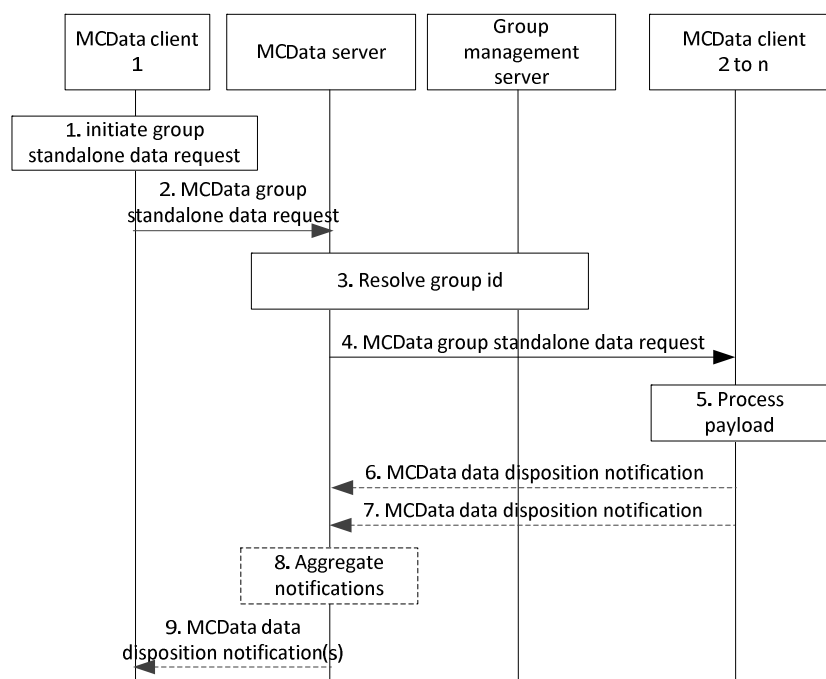


Figure 7.4.2.5.2-1: Group standalone SDS using signalling control plane

1. The user at MCDData client 1 initiates an SDS data transfer to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group standalone data request towards the MCDData server. The MCDData group data request contains MCDData group ID as selected by the user at MCDData client 1. The MCDData group standalone data request contains conversation identifier for message thread indication. The MCDData group standalone data request may contain disposition request if indicated by the user at MCDData client 1.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData group standalone data request. The MCDData server resolves the MCDData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCDData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege or affiliation.
4. MCDData server initiates the MCDData group standalone data request towards each MCDData client determined in Step 3.
5. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData clients 2 to n may be notified. Otherwise if the payload is not for MCDData user

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

6. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client(s) initiates a MCDData data disposition notification for delivery report.
7. If the MCDData data disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData data disposition notification for read report.
8. The MCDData data disposition notification(s) from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users. The MCDData data disposition notification(s) from each MCDData user may be aggregated.
9. Aggregated or individual MCDData data disposition notification(s) is sent to the disposition requesting user at MCDData client 1.

7.4.2.6 Group standalone short data service using media plane

7.4.2.6.1 General

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

7.4.2.6.2 Procedure

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

Pre-conditions:

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

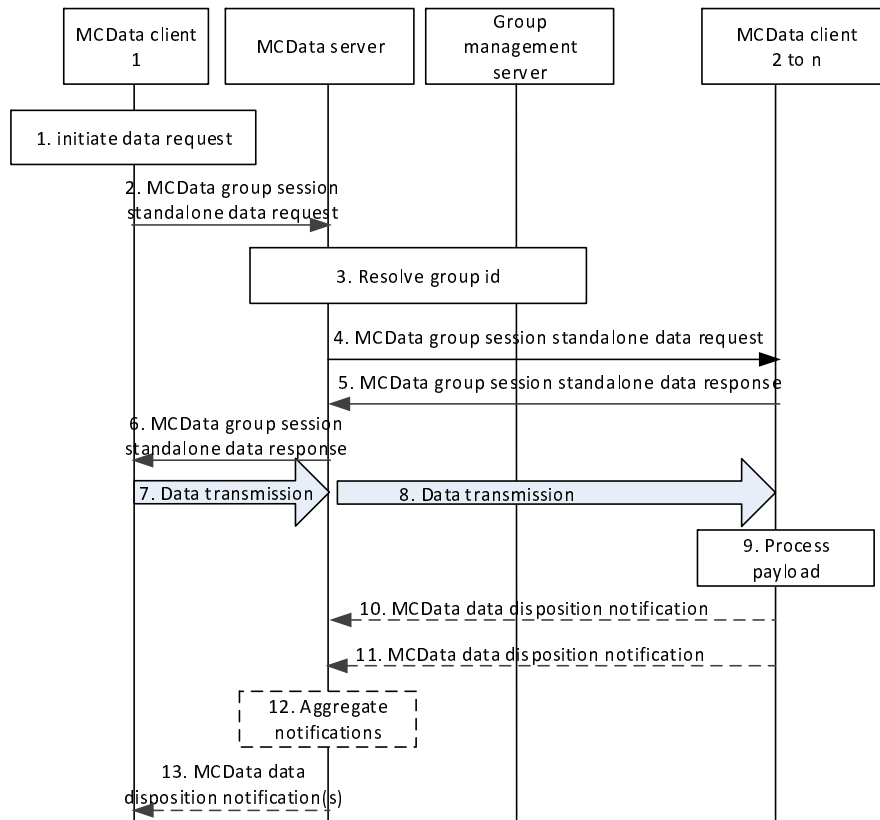


Figure 7.4.2.6.2-1: Group standalone SDS using media plane

1. User at MCDData client 1 would like to initiate a SDS data transfer request to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group session standalone data request towards the MCDData server. The MCDData group session standalone data request contains target recipient(s) as selected by the user at MCDData client 1. The MCDData group session standalone data request contains conversation identifier for message thread indication. The MCDData group session standalone data request may contain disposition request if indicated by the user at MCDData client 1.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData session group standalone data request. The MCDData server resolves the MCDData group ID to determine the members of that group and their affiliation status, based on the information from the group management server. The MCDData server also checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege.
4. MCDData server initiates the MCDData group session standalone data request towards each MCDData user determined in Step 3.
5. The receiving MCDData clients 2 to n automatically accepts the MCDData group session standalone data request and responds with MCDData group session standalone data response towards MCDData server.
6. MCDData server forwards the MCDData clients 2 to n accepted response to the MCDData user initiating the MCDData group session standalone data request.

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

7. MCDData client 1 and MCDData server have successfully established media plane for data communication and the MCDData client 1 transmits the SDS data.
8. MCDData server distributes the data received from MCDData client 1 to MCDData clients 2 to n over the established media plane. After completion of the MCDData transfer from MCDData client 1, media plane resources associated to the data communication are released.

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

9. If the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 to n may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData client 2 to n shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.
10. If the MCDData data disposition for delivery was requested by the user at MCDData client 1, then the receiving MCDData client(s) initiates a MCDData data disposition notification for delivery report.
11. If the MCDData data disposition for read was requested by the user at MCDData client 1, then once the receiving user reads the data, the receiving MCDData client 2 initiates a MCDData data disposition notification for read report.
12. The MCDData data disposition notification(s) from MCDData client may be stored by the MCDData server for disposition history interrogation from authorized MCDData users. The MCDData data disposition notification(s) from each MCDData user may be aggregated.
13. Aggregated or individual MCDData data disposition notification(s) is sent to the disposition requesting user at MCDData client 1.

7.4.2.7 Group short data service session

7.4.2.7.1 General

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

7.4.2.7.2 Procedure

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

Pre-conditions:

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

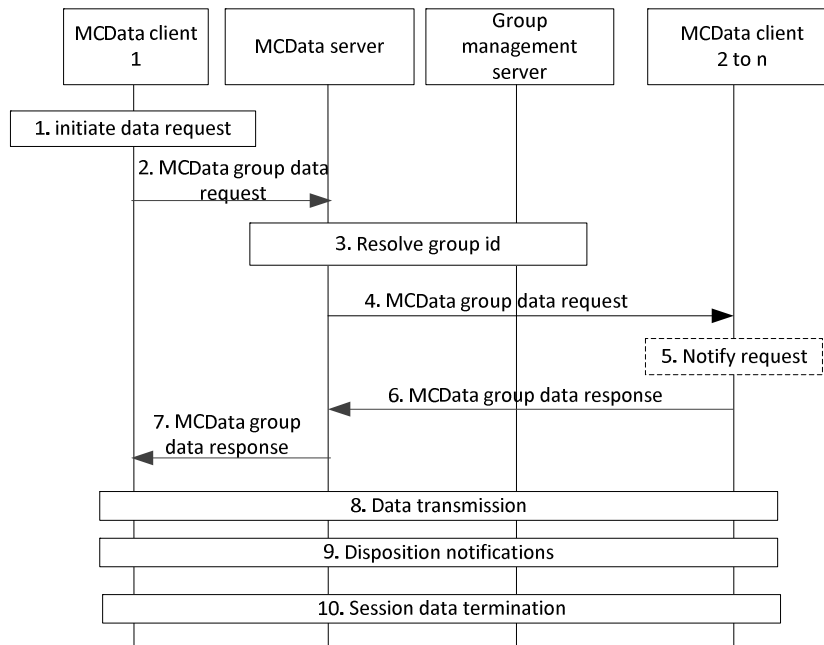


Figure 7.4.2.7.2-1: Group SDS session

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 MCDData user may be stored by the MCDData server for disposition history interrogation from authorized users.

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

7.4.3 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 MCDData standalone data request

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

Table 7.4.3.2.1-1: MCDData standalone data request

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

7.4.3.2.2 MCDData data disposition notification

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

Table 7.4.3.2.2-1: MCDData data disposition notification

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

7.4.3.2.3 MCDData group standalone data request

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

Table 7.4.3.2.3-1: MCDData group standalone data request

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

7.4.3.3.2 Procedure

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

Pre-conditions:

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

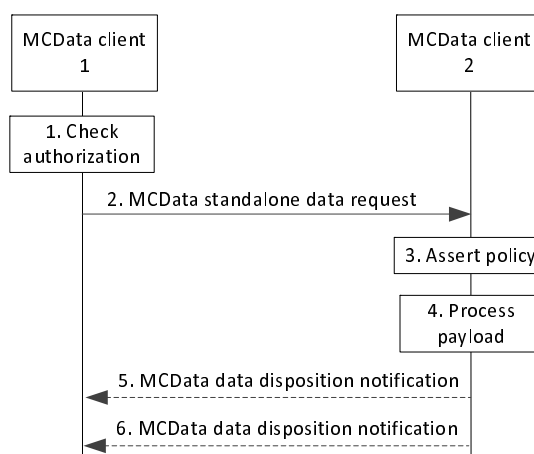


Figure 7.4.3.3.2-1: One-to-one standalone short data service using signalling control plane

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

3. On receiving a MCDData standalone data request, the MCDData client 2 checks whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege.
4. If the policy assertion is positive and the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user of MCDData client 2 may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user of MCDData client 2 shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.

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

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

7.4.3.4 Group standalone short data service using signalling control plane

7.4.3.4.1 General

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

7.4.3.4.2 Procedure

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

Pre-conditions:

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

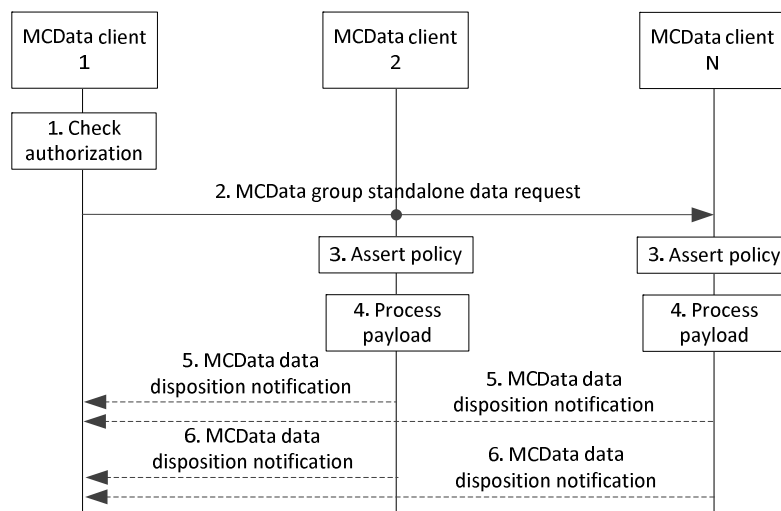


Figure 7.4.3.4.2-1: Group standalone short data service using signalling control plane

1. MCDData client 1 checks whether the MCDData user 1 is authorized to send MCDData group standalone data request.
2. If MCDData user 1 is authorised MCDData client 1 sends a MCDData group standalone data request towards the MCDData group. The MCDData group standalone data request contains conversation identifier for message thread indication. The MCDData group standalone data request may contain disposition request if indicated by the user at MCDData client 1. If MCDData group standalone data request contains disposition request, MCDData group standalone data request shall also contain the IP address of the MCDData client 1.
3. On receiving a MCDData group standalone data request, the MCDData clients check whether any policy is to be asserted to limit certain types of message or content to certain members due, for example, to location or user privilege.
4. If the policy assertion is positive and the payload is for MCDData user consumption (e.g. is not application data, is not command instructions, etc.) then the MCDData user may be notified. Otherwise if the payload is not for MCDData user consumption, then the MCDData user shall not be notified. The action taken when the payload contains application data or command instructions are specific based on the contents of the payload. Payload content received by MCDData client 2 which is addressed to a known local non-MCDData application that is not yet running shall cause the MCDData client 2 to start the local non-MCDData application (i.e., remote start application) and shall pass the payload content to the just started application.

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

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

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

Table 7.5.2.1.1-1: MCDData upload data request

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

7.5.2.1.2 MCDData upload data response

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

Table 7.5.2.1.2-1: MCDData upload data response

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

7.5.2.1.3 MCDData download data request

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

Table 7.5.2.1.3-1: MCDData download data request

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

7.5.2.1.4 MCDData download data response

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

Table 7.5.2.1.4-1: MCDData download data response

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

7.5.2.1.5 MCDData FD request (using HTTP)

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending file
MCDData ID	M	The identity of the MCDData user receiving file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed 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 MCDData FD response (using HTTP)

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

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

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

7.5.2.1.7 MCDData download completed report

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

Table 7.5.2.1.7-1: MCDData download completed report

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

7.5.2.1.8 MCDData FD request (using media plane)

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending file
MCDData ID	M	The identity of the MCDData user receiving file
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed 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 MCDData FD response (using media plane)

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

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

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

7.5.2.1.10 MCDData group standalone FD request (using HTTP)

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending file
MCDData group ID	M	The MCDData group ID to which the file is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed 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 MCDData group standalone FD response (using HTTP)

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

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

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

7.5.2.1.12 MCDData group standalone FD request (using media plane)

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

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user sending file
MCDData group ID	M	The MCDData group ID to which the data is to be sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Reply Identifier	O	Identifies the original MCDData transaction to which the current transaction is a reply to
Disposition indication	O	Indicates whether file download completed 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 MCDData group standalone FD response (using media plane)

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

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

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

7.5.2.2 File upload using HTTP

7.5.2.2.1 General

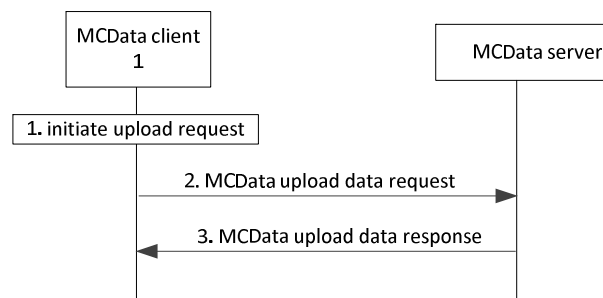
The MCDData client uses HTTP for a standalone data file upload towards the MCDData server.

7.5.2.2.2 Procedure

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

Pre-conditions:

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

**Figure 7.5.2.2.2-1: File upload using HTTP**

1. The user at the MCDData client 1 initiates a file upload request of the chosen file and the MCDData client 1 verifies that the size of the file is within the maximum data size for FD for the intended MCDData FD request (by checking the group configuration for a group FD request and by checking the service configuration for a one-to-one FD request).
2. The file to be uploaded is received by the media storage client at the MCDData client 1 and sent to the media storage function on the MCDData server for storing using the MCDData upload data request.
3. The MCDData server also applies transmission control policy before storage and provides a MCDData upload data response indicating success (along with file URL to the media storage client at the MCDData client 1) or failure.

7.5.2.3 File download using HTTP

7.5.2.3.1 General

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

7.5.2.3.2 Procedure

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

Pre-conditions:

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

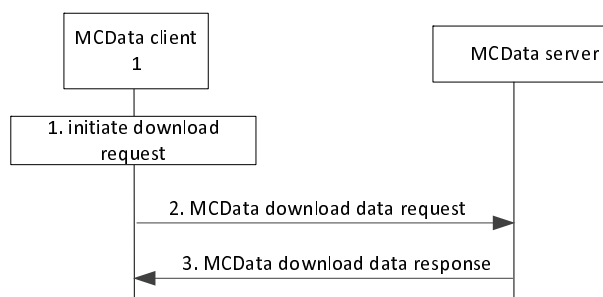


Figure 7.5.2.3.2-1: File download using HTTP

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

7.5.2.4 One-to-one file distribution using HTTP

7.5.2.4.1 General

The MCDData client uses HTTP for a standalone data file download from another MCDData 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 MCDData user is initiating one-to-one data communication for sending file to the other MCDData user, with or without download completed report request.

Pre-conditions:

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

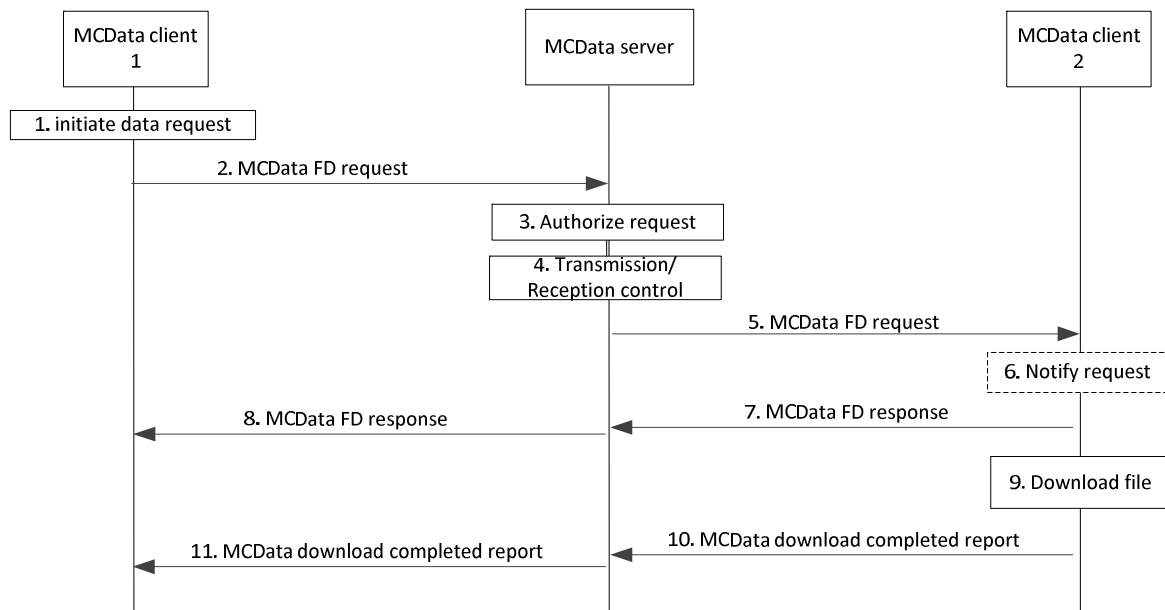


Figure 7.5.2.4.2-1: One-to-one file distribution using HTTP

1. The user at the MCDData client 1 initiates a file distribution request to the chosen MCDData user.
2. The MCDData client 1 sends a MCDData FD request towards the MCDData server. The MCDData FD request contains content payload in the form of file URL and may contain the file metadata information. The MCDData FD request contains one MCDData user for one-to-one data communication as selected by the user at MCDData client 1. The MCDData FD request contains conversation identifier for message thread indication. If MCDData user at MCDData client 1 has requested to mandatory download at the recipient side, then MCDData FD request contains mandatory download indication. The MCDData FD request may contain download completed report indication if selected by the user at MCDData client 1.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData FD request and that the size of the file is below maximum data size for FD from the service configuration.
4. The MCDData server also applies transmission and reception control and the necessary policy to ensure that appropriate data is transmitted between the MCDData UEs.
5. MCDData server initiates the MCDData FD request towards the MCDData user.
6. The receiving MCDData client 2 notifies the user about the incoming MCDData FD request (including file metadata, if present) which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCDData FD request an accepted response is assumed.
7. MCDData user 2 may provide a response (accept or reject) or not (ignore) to the notification, then MCDData client 2 sends the MCDData FD response to the MCDData server. MCDData client 2 automatically sends accepted MCDData FD response when the incoming request included mandatory download indication.
8. The MCDData server forwards the MCDData FD response to the MCDData client 1.
9. MCDData client 2 downloads the file using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCDData user 2 subsequent acceptance. The MCDData client 2 records file download completed and notifies MCDData user 2.
10. MCDData client 2 initiates a MCDData download completed report for reporting file download completed, if requested by the user at MCDData client 1.
11. The MCDData file download completed report from MCDData user may be stored by the MCDData server for download history interrogation from the authorized MCDData users. MCDData download completed report is sent by the MCDData server to the user at MCDData client 1.

7.5.2.5 One-to-one file distribution using media plane

7.5.2.5.1 General

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

7.5.2.5.2 Procedure

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

Pre-conditions:

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

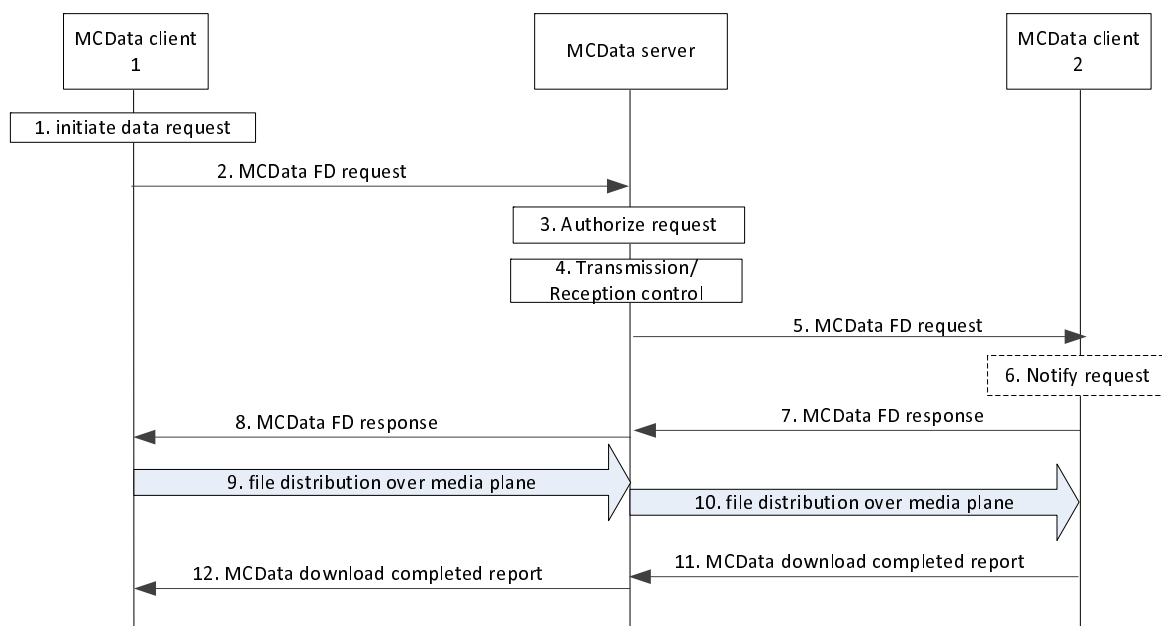


Figure 7.5.2.5.2-1: One-to-one file distribution using media plane

1. The user at the MCDData client 1 initiates a file distribution request to the chosen MCDData user.
2. MCDData client 1 sends a MCDData FD request towards the MCDData server. The MCDData FD request may contain the file metadata information. The MCDData FD request contains one MCDData user for one-to-one data communication as selected by the user at MCDData client 1. The MCDData FD request contains conversation identifier for message thread indication. MCDData FD request may contain mandatory download indication. The MCDData FD request may contain download completed report indication if selected by the user at MCDData client 1.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData FD request.
4. The MCDData server also applies transmission and reception control and the necessary policy to ensure that appropriate data is transmitted between the MCDData UEs.
5. MCDData server initiates the MCDData FD request towards the MCDData user.
6. The receiving MCDData client 2 notifies the user about the incoming MCDData FD request (including file metadata, if present) which may be either accepted or rejected or ignored. If the request includes mandatory download indication in the MCDData FD request an accepted response is assumed.

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

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

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

7.5.2.6 Group standalone file distribution using HTTP

7.5.2.6.1 General

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

7.5.2.6.2 Procedure

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

Pre-conditions:

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

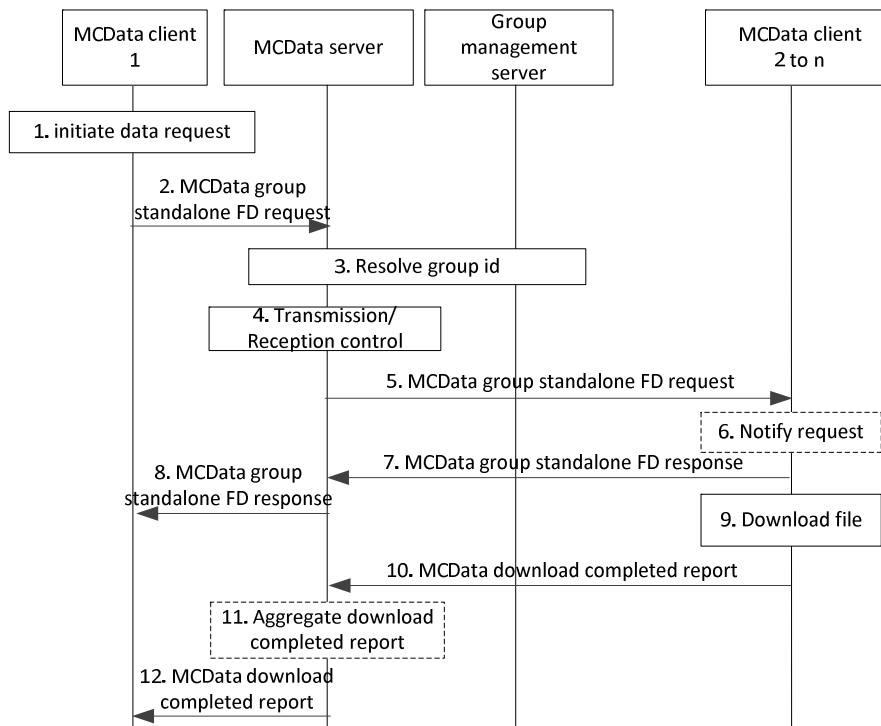


Figure 7.5.2.6.2-1: Group standalone FD using HTTP

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 and that the size of the file is below maximum data size for FD from the group configuration. 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. MCDData client(s) downloads the file using the procedures defined in subclause 7.5.2.3, either automatically (for mandatory download) or based upon the MCDData user subsequent acceptance. The MCDData clients successfully receiving the file, records file download completed and notifies MCDData user.
10. The MCDData client(s), successfully receiving the file, initiate a MCDData download completed report for reporting file download completed, if requested by the user at MCDData client 1.
11. The MCDData file download completed report from MCDData client(s) may be stored by the MCDData server for download history interrogation from the authorized MCDData users. The MCDData file download completed report from each MCDData user may be aggregated.
12. Aggregated or individual MCDData download completed report is sent by the MCDData server to the user at MCDData client 1.

7.5.2.7 Group standalone file distribution using media plane

7.5.2.7.1 General

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

7.5.2.7.2 Procedure

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

Pre-conditions:

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

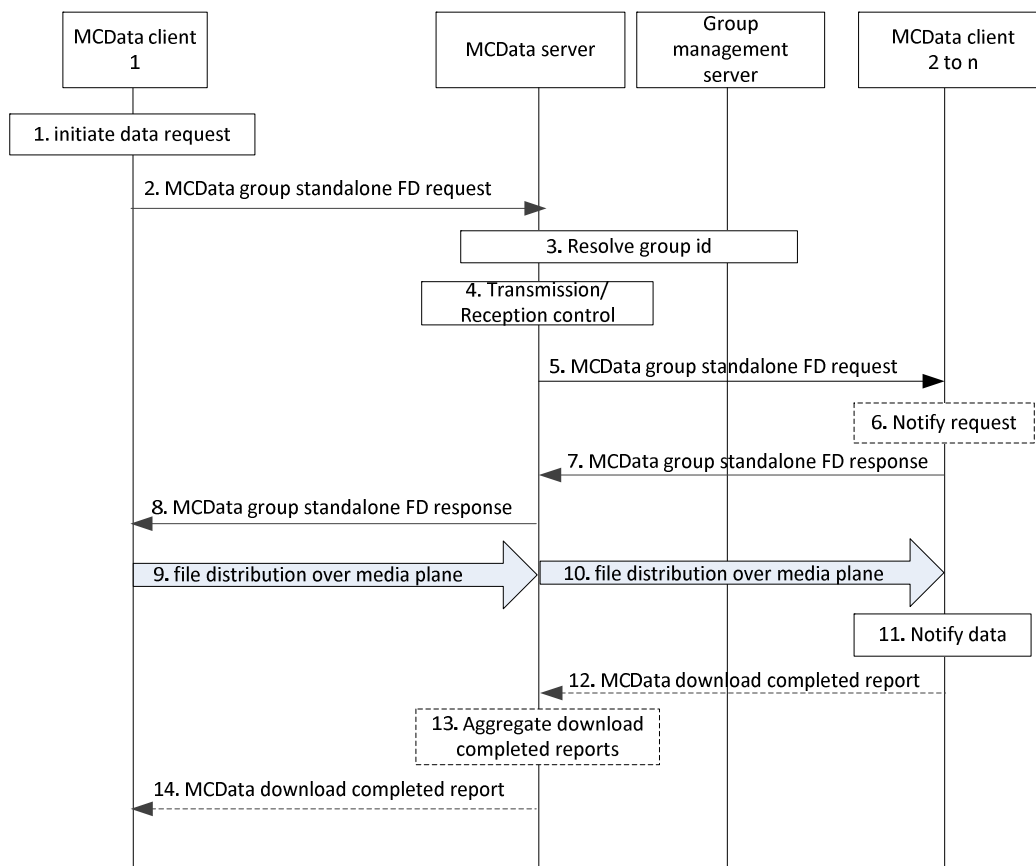


Figure 7.5.2.7.2-1: Group standalone FD using media plane

1. The user at the MCDData client 1 initiates a file distribution request to multiple MCDData users selecting a pre-configured group (identified by MCDData group ID) and optionally particular members from that group.
2. MCDData client 1 sends a MCDData group standalone FD request towards the MCDData server. The MCDData group standalone FD request may contain the file metadata information. The MCDData group standalone data request contains target recipient(s) as selected by the user at MCDData client 1. The MCDData group standalone FD request contains conversation identifier for message thread indication. MCDData group standalone FD request may contain mandatory download indication. The MCDData group standalone FD request may contain download completed report indication if selected by the user at MCDData client 1.
3. MCDData server checks whether the MCDData user at MCDData client 1 is authorized to send MCDData group standalone FD request. The MCDData server resolves the MCDData group ID to determine the members of that group and their affiliation status, based on the information from the group management server.
4. The MCDData server also applies transmission and reception control and the necessary policy to ensure that appropriate data is transmitted between the MCDData UEs.
5. MCDData server initiates the MCDData group standalone FD request towards each MCDData user determined in step 3.
6. The receiving MCDData clients 2 to n notifies the user about the incoming MCDData 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 MCDData group standalone FD request an accepted response is assumed.
7. If the target MCDData user on MCDData clients 2 to n provides a response (accept or reject) to the notification, then the respective MCDData client sends the MCDData group standalone FD response to the MCDData server. MCDData client 2 to n automatically sends accepted MCDData group standalone FD response when the incoming request included mandatory download indication.
8. MCDData server forwards the MCDData group standalone FD response to the MCDData 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. MCDData client 1 and MCDData server have successfully established media plane for file transmission and the MCDData client 1 transmits the file data.
10. MCDData server distributes the file received from MCDData client 1 to MCDData 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 MCDData clients, if requested by the user at MCDData client 1. After file transaction is completed, the media plane is released.

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

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

7.6 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 MCDData control indication

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

Table 7.6.2.1.1-1: MCDData control indication

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user towards which the control indication is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Control indication type	M	One of the following: <ul style="list-style-type: none"> - No permission to transmit data - No affiliated members found to the selected MCDData group - Rejected due to exceeding data transmit size - Rejected due to exceeding data transmit time - Request to transmit is queued

7.6.2.1.2 MCDData indication

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

Table 7.6.2.1.2-1: MCDData indication

Information element	Status	Description
MCDData ID	M	The identity of the MCDData user towards which the control indication is sent
Conversation Identifier	M	Identifies the conversation
Transaction Identifier	M	Identifies the MCDData transaction
Control indication type	O	One of the following: <ul style="list-style-type: none"> - No permission to transmit data - No affiliated members found to the selected MCDData group - Rejected due to exceeding data transmit size - Rejected due to exceeding data transmit time - Request to transmit is queued - 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 MCDData get deferred list request

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

Table 7.6.2.1.3-1: MCDData get deferred list request

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

7.6.2.1.4 MCDData get deferred list response

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

Table 7.6.2.1.4-1: MCDData get deferred list response

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

7.6.2.2 Automatic transmission for SDS

7.6.2.2.1 General

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

7.6.2.2.2 Procedure

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

Pre-conditions:

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

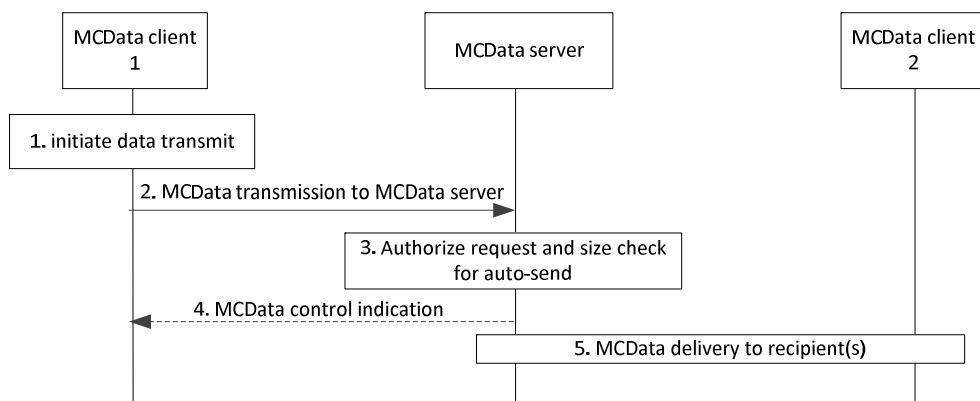


Figure 7.6.2.2.2-1: Automatic transmission for SDS

1. MCDData user selects the data to transmit and the recipient MCDData user or MCDData group.
2. MCDData client checks for MCDData user's permission to transmit data, and checks if the data size is less than the maximum data size for SDS. MCDData client calculates the total transmission request size and determines to select one of the appropriate 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 MCDData user is authorized to transmit and the data size in the received transmission request is less than the maximum data size for SDS.
4. MCDData server may send one of the following MCDData control indications:
 - a) If the MCDData user does not have permission to transmit data to another 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 MCDData group and there are no affiliated group members, then the transmission control on MCDData server sends the "No affiliated members found to the selected MCDData group" control indication.

Otherwise continue with step 5.

5. MCDData server automatically transmits the data to the selected MCDData user or the affiliated members of the selected MCDData 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 MCDData client to send data to a receiving MCDData client, where the receiving MCDData client is compelled to download the data.

7.6.2.3.2 Procedure

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

Pre-conditions:

1. 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.

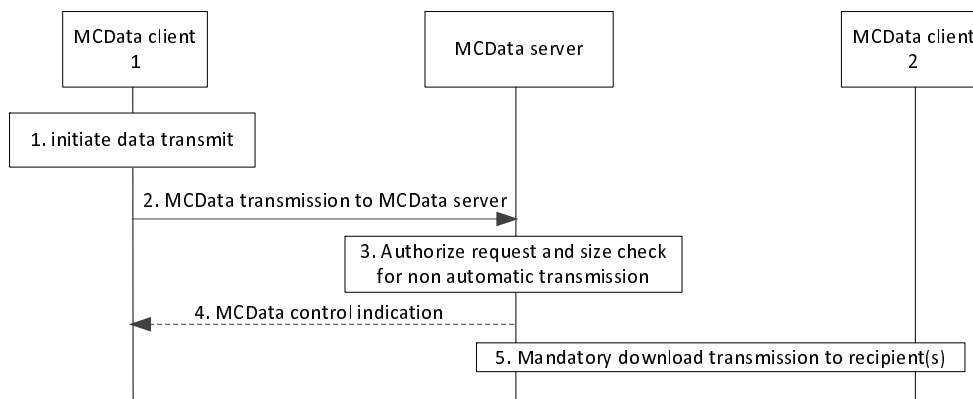


Figure 7.6.2.3.2-1: Send data with mandatory download

1. MCDData user selects the data to transmit, the recipient MCDData user or MCDData group and the indication for mandatory download.
2. MCDData client has checked for MCDData user's permission to transmit data. MCDData client calculates the total transmission request size and determines to select one of the appropriate procedures described in subclause 7.5.2.4, 7.5.2.5, 7.5.2.6 or 7.4.2.7 and including the mandatory download indication.
3. Transmission control on the server verifies if the MCDData user is authorized to transmit and the data size in the received transmission request is within the maximum size allowed for FD transmission.
4. MCDData server may send one of the following MCDData control indications:
 - a) If the MCDData user does not have permission to transmit data to another 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 MCDData user can transmit in a single request, the transmission control on MCDData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit size".
- c) If the data transmission time exceeds the maximum amount of time that an MCDData user can transmit in a single request, the transmission control on MCDData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".
- d) If the selected transmission is for a MCDData group and there are no affiliated group members, then the transmission control on MCDData server sends the "No affiliated members found to the selected MCDData group" control indication.
- e) MCDData server may queue the data transmit request for later transmission with control indication "Request to transmit is queued".

Otherwise continue with step 5.

- 5. MCDData server transmits the data to the selected MCDData user or the affiliated members of the selected MCDData group according to the procedures selected in step 2 (where the recipient MCDData 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 MCDData client to accept download, defer download (i.e. no response) or refuse (e.g. by the user deleting the notification item) the data sent from the sending MCDData client.

7.6.2.4.2 Procedure

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

Pre-conditions:

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

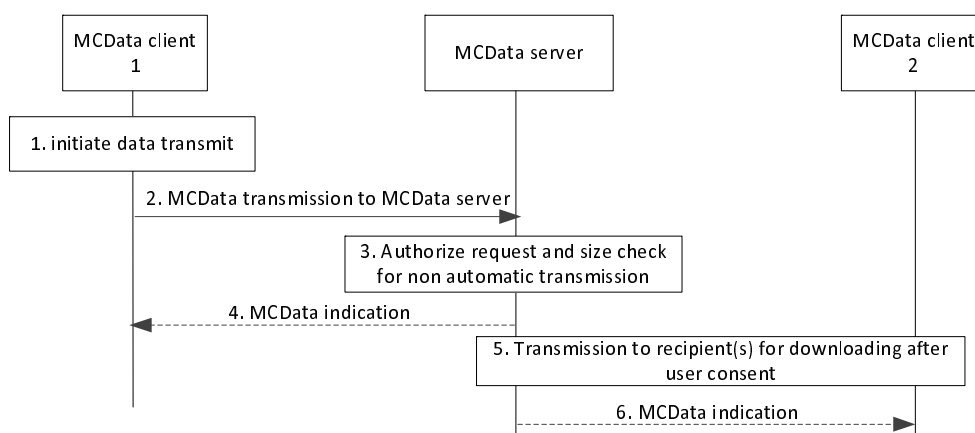


Figure 7.6.2.4.2-1: Send data without mandatory download

- 1. MCDData user selects the data to transmit and the recipient MCDData user or MCDData group and does not select the mandatory download indication.

2. MCDData client has checked for MCDData user's permission to transmit data and the data size is within the maximum data size allowed. The MCDData client calculates the total transmission request size and determines to select procedure described in subclause 7.5.2.4 or 7.5.2.6 and without including the mandatory download indication.
3. Transmission control on the server verifies if the MCDData user is authorized to transmit and the data size in the received transmission request is within the maximum data size allowed.
4. MCDData server sends control indication appropriate to trigger condition:
 - a) If the MCDData 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 MCDData group and there are no affiliated group members, then the transmission control on MCDData server sends the "No affiliated members found to the selected MCDData group" control indication.
 - c) If the data size requested to be transmitted is more than the maximum amount of data that an MCDData user can transmit in a single request, the transmission control on MCDData server rejects the data transmission requests and sends the rejection control indication "Rejected due to exceeding data transmit size".
 - d) If the data transmission time exceeds the maximum amount of time that an MCDData user can transmit in a single request (applies to DS only), the transmission control on MCDData server rejects the data transmission request and sends the rejection control indication "Rejected due to exceeding data transmit time".
 - e) MCDData server may queue the data transmit request for later transmission with a control indication "Request to transmit is queued".

Otherwise, continue with step 5.

5. If the temporarily stored data has not expired, the MCDData server transmits the data to the selected MCDData user or the affiliated members of the selected MCDData group according to the procedures selected in step 2 (where the recipient MCDData client may receive the data automatically).
6. Otherwise, MCDData server sends MCDData 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 MCDData 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 MCDData 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 MCDData client to obtain a list of deferred data communications.

7.6.2.5.2 Procedure

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

Pre-conditions:

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

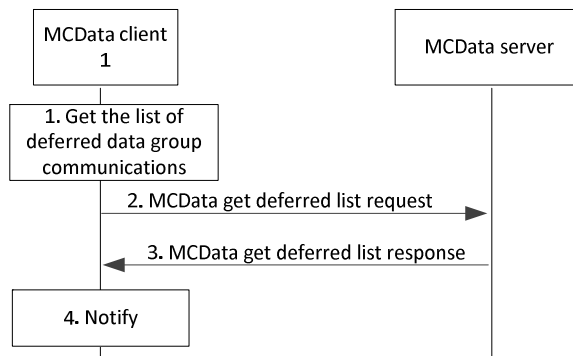


Figure 7.6.2.5.2-1: Accessing list of deferred data group communications

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

7.7 Communication release

7.7.1 General

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

7.7.2 Communication release for on-network

7.7.2.1 Information flows for communication release

7.7.2.1.1 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 MCDData client to the MCDData server and from the MCDData server to another MCDData client.

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

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

7.7.2.1.2 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 MCDData client to the MCDData server and from the MCDData server to another MCDData client.

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

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

7.7.2.1.3 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 MCDData client to the MCDData server and from the MCDData server to another MCDData client.

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

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

7.7.2.1.4 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 MCDData client to the MCDData server and from the MCDData server to another MCDData client.

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

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

7.7.2.1.5 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 MCDData client to the MCDData server.

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData 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 MCDData server to the MCDData client.

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

Information element	Status	Description
MCDData ID	M	The identity of the MCDData 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 MCDData server to the MCDData client.

Table 7.7.2.1.7-1: Data not available control indication

Information element	Status	Description
MCDData ID	M	The identity of the MCDData 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 MCDData user initiated communication release

7.7.2.2.1 General

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

7.7.2.2.2 Release of MCDData communication using media plane

7.7.2.2.2.1 General

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

Editor's note: Release of MCDData communication over MBMS is FFS.

7.7.2.2.2.2 Procedure

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

Pre-conditions:

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

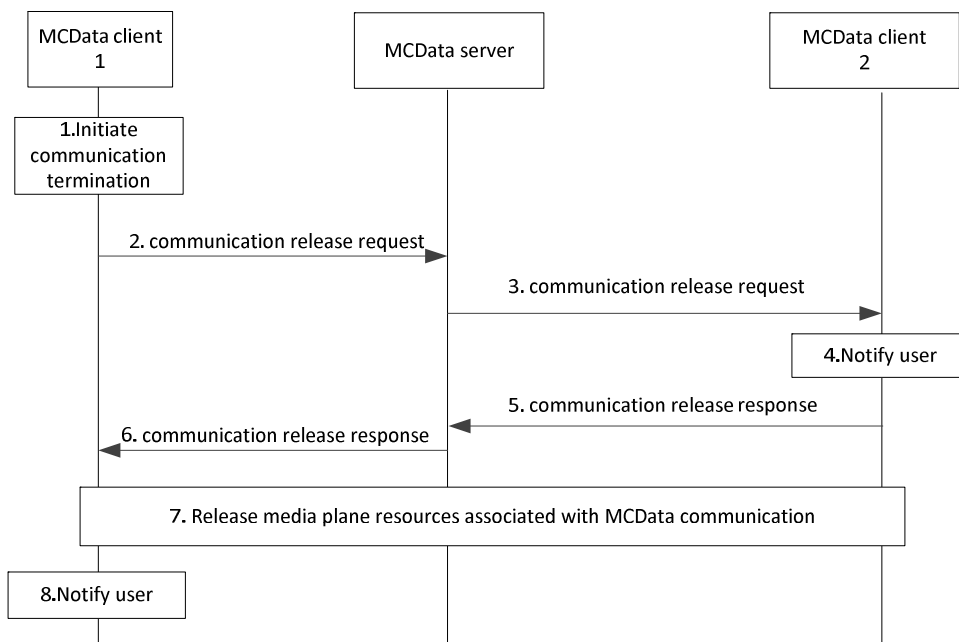


Figure 7.7.2.2.2-1: Release of MCDData communication using media plane

1. MCDData user at MCDData client 1 requests to release ongoing MCDData communication.

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

7.7.2.2.3 Release of MCDData communication using HTTP

7.7.2.2.3.1 General

The subclause describes the procedure for MCDData user initiated MCDData communication release where MCDData 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 MCDData communication is ongoing and transmitting participant initiates MCDData communication release. The procedure is applicable for one-to-one and group MCDData communications.

Pre-conditions:

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

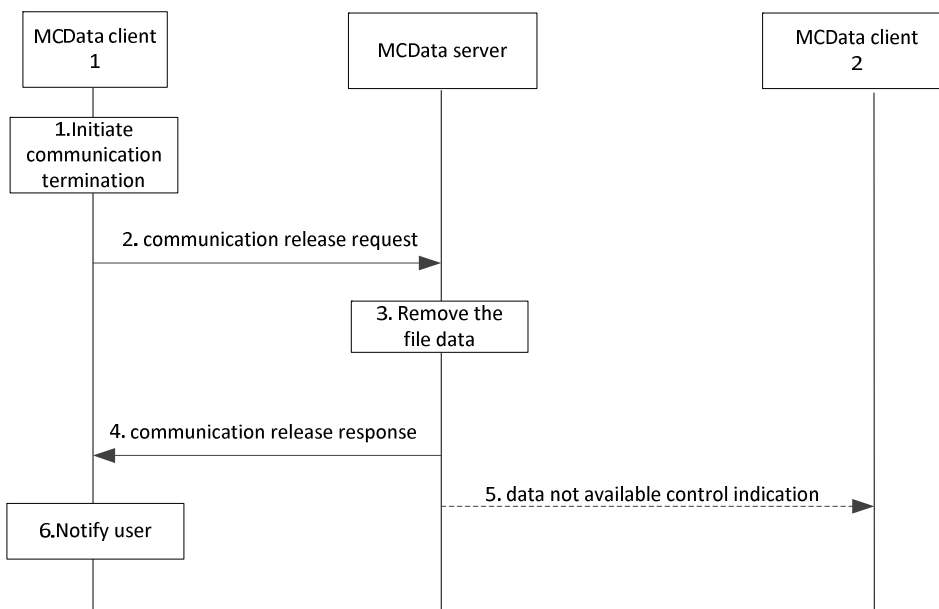


Figure 7.7.2.2.3.2-1: Release of MCDData communication using HTTP

1. MCDData user at MCDData client 1 requests to release ongoing file transmission.
2. MCDData client 1 sends communication release request towards MCDData 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-emptively releases 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.

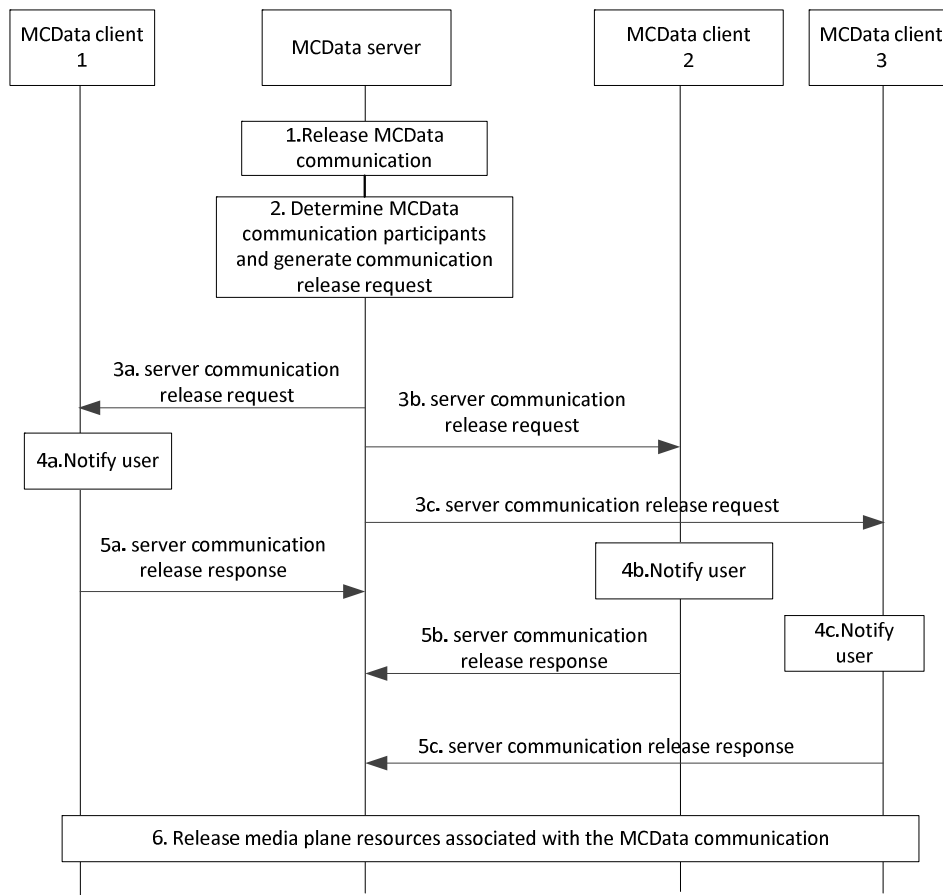


Figure 7.7.2.3.2.2-1: MCDATA server initiated release of MCDATA communication using media plane

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 MCDData communication, communication release conditions, MCDData server initiates the communication release. The procedure is applicable for one-to-one and group communication.

Pre-conditions:

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

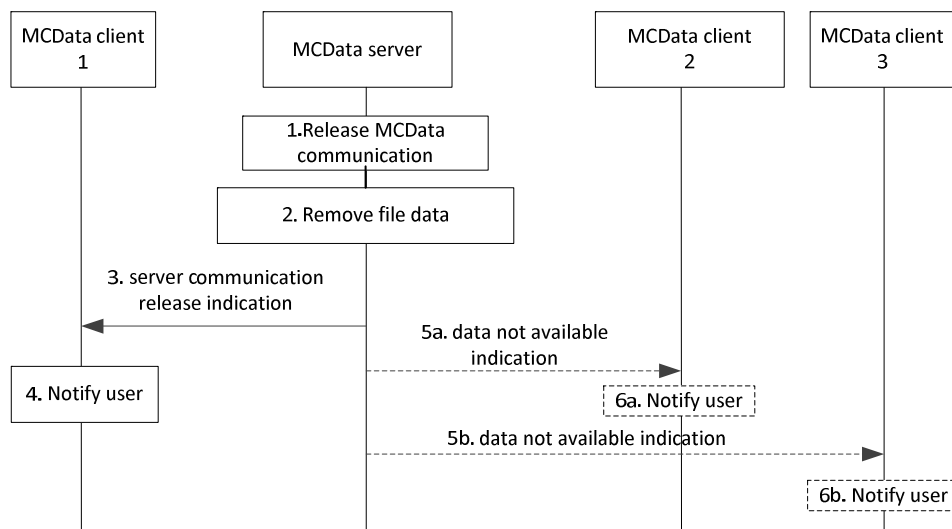


Figure 7.7.2.3.3.2-1: MCDData server initiated release of MCDData communication using HTTP

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

7.7.2.4 MCDData server initiated communication release with prior indication

7.7.2.4.1 General

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

7.7.2.4.2 Procedure

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

Pre-conditions:

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

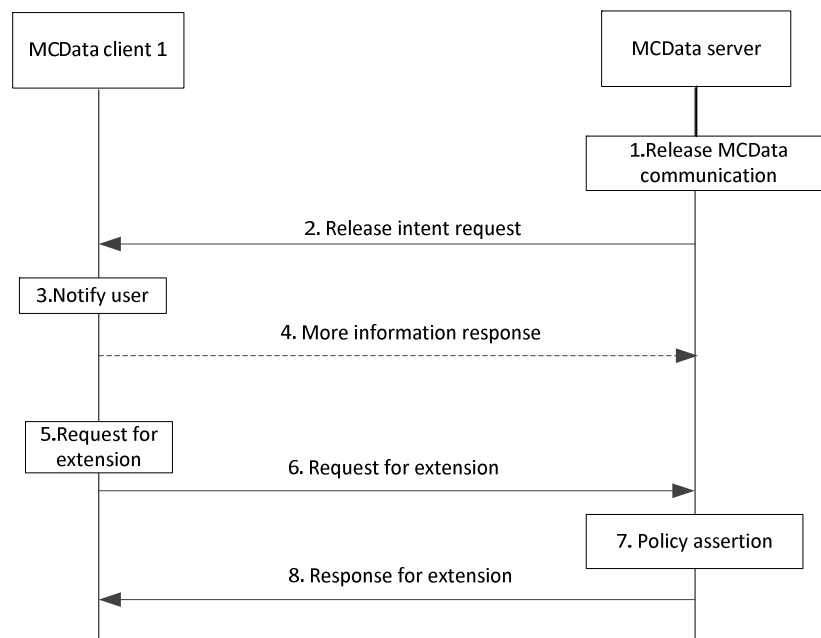


Figure 7.7.2.4.2-1: MCDData server initiates communication release with prior indication

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

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

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

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

7.7.2.5 Authorized MCDData user initiated communication release without prior indication

7.7.2.5.1 General

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

7.7.2.5.2 Procedure

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

Pre-conditions:

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

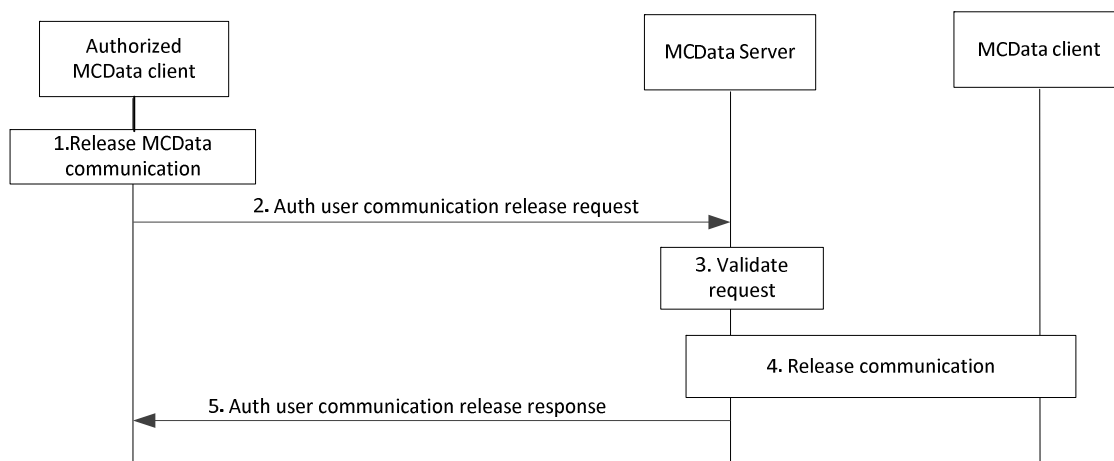


Figure 7.7.2.5.2-1: An authorized MCDData user initiates communication release without prior indication

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

3. MCDData server validates the user from whom the communication release request is received and checks whether the requesting MCDData user is authorized to release communication or not.
4. If the user is authorized to release communication, then MCDData server releases the ongoing MCDData communication according to procedures described in subclause 7.7.2.3.
5. MCDData server sends auth user communication release response containing the result of MCDData communication release back to authorized MCDData client 1.

7.7.2.6 Authorized MCDData user initiated communication release with prior indication

7.7.2.6.1 General

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

7.7.2.6.2 Procedure

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

Pre-conditions:

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

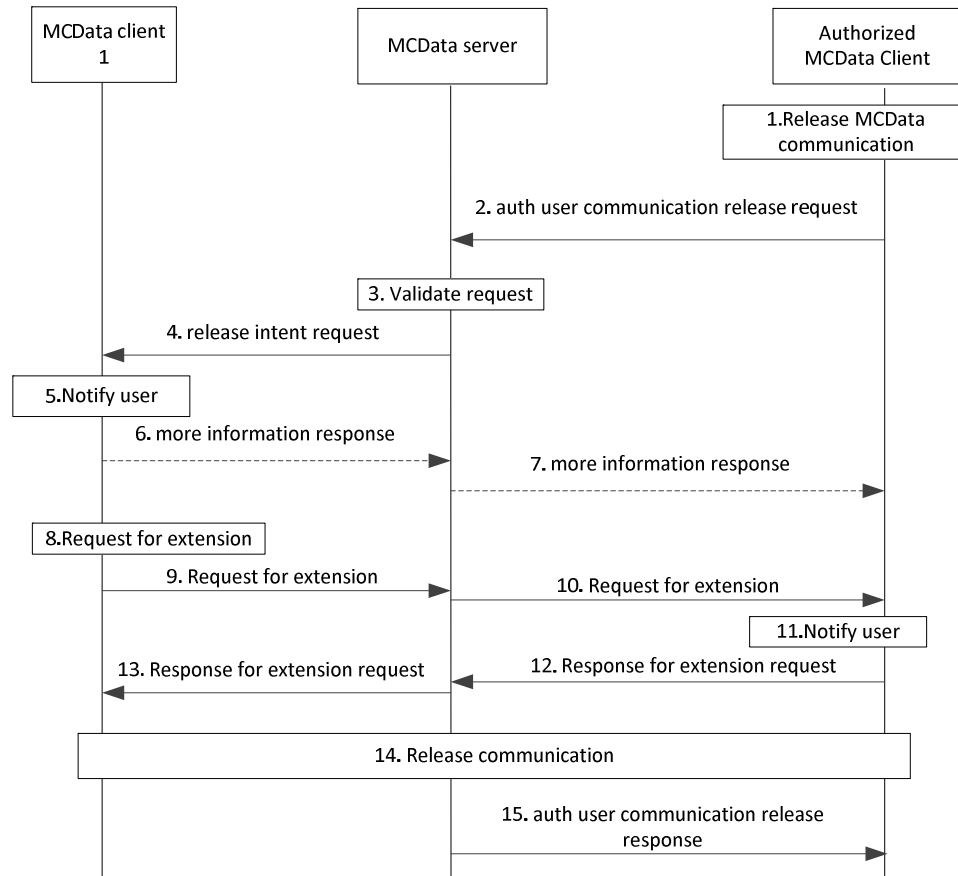


Figure 7.7.2.6.2-1: An authorized MCDData user initiates communication release with prior indication

1. An authorized MCDData user requests to release the ongoing MCDData communication by providing prior indication to the initiator of MCDData communication, MCDData client 1.
2. An authorized MCDData client sends auth user communication release request towards MCDData server including the communication identifier identifying the MCDData communication to release. Authorized MCDData client may include request for more information (e.g. to know the remaining data volume to transmit). The request also includes indication to MCDData server to release MCDData communication with prior indication to the initiator MCDData client.
3. MCDData server validates the user from whom the communication release request is received and checks whether the requesting user is authorized to release communication or not.
4. If the user is authorized to release communication, then the MCDData server sends release intent request, may be including the reason for the release. MCDData server may include request for more information as received in the request from the authorized MCDData client.
5. MCDData client informs MCDData user about the intent to release communication by the authorized MCDData user.
6. If request for more information is included in the received release intent request, MCDData client 1 sends more information response including the remaining amount of data to transmit.
7. MCDData server forwards the more information response to the authorized MCDData client.

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

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

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

7.8 Conversation management

7.8.1 General

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

7.8.2 Conversation management for on-network

7.8.2.1 Information flows for conversation management

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

7.8.2.2 One-to-one conversation management

7.8.2.2.1 Procedure

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

Pre-conditions:

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

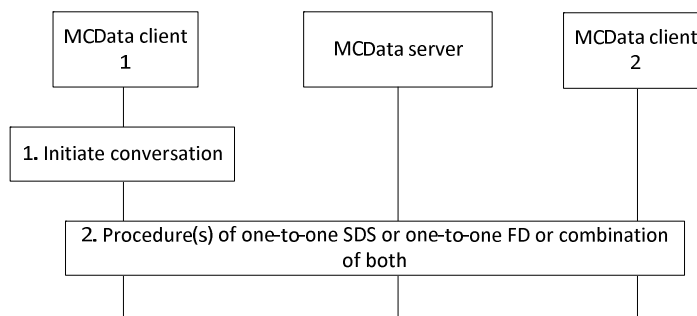


Figure 7.8.2.2.1-1: One-to-one conversation management

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

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

7.8.2.3 Group conversation management

7.8.2.3.1 Procedure

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

Pre-conditions:

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

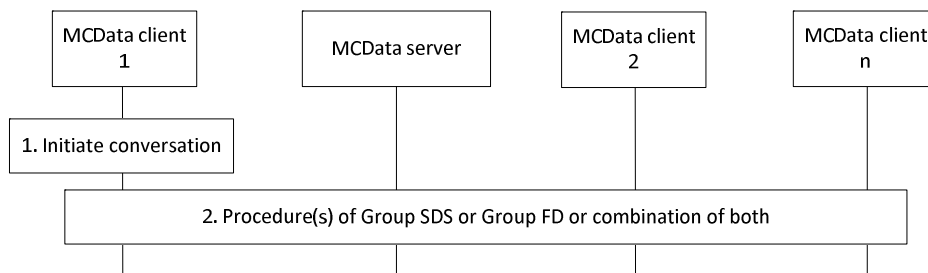


Figure 7.8.2.3.1-1: Group conversation management

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

7.8.3 Conversation management for off-network

7.8.3.1 One-to-one conversation management

7.8.3.1.1 Procedure

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

Pre-conditions:

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

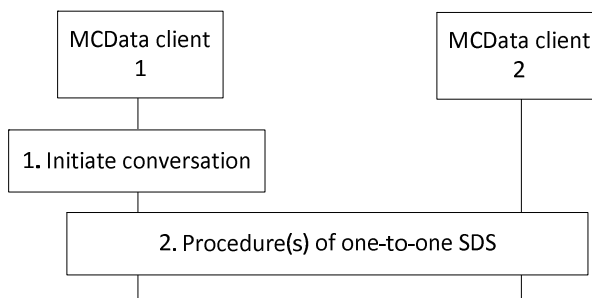


Figure 7.8.3.1.1-1: One-to-one conversation management

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.

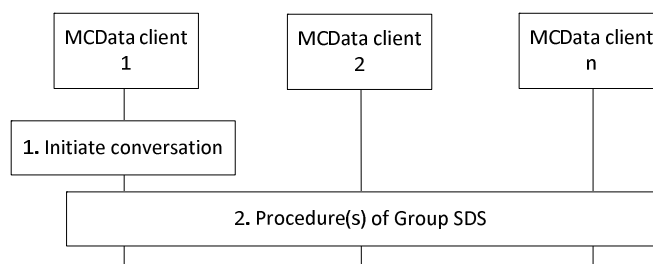


Figure 7.8.3.2.1-1: Group conversation management

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 MCDData user, shall be configured by the MCDData administrator. The configuration of status values is applicable on a per-group basis, and therefore shall be part of the MCDData group configuration data as described in Annex A.4.

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

7.9.3 Enhanced status for on-network

7.9.3.1 Sharing enhanced status information

7.9.3.1.1 Procedure

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

Pre-conditions:

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

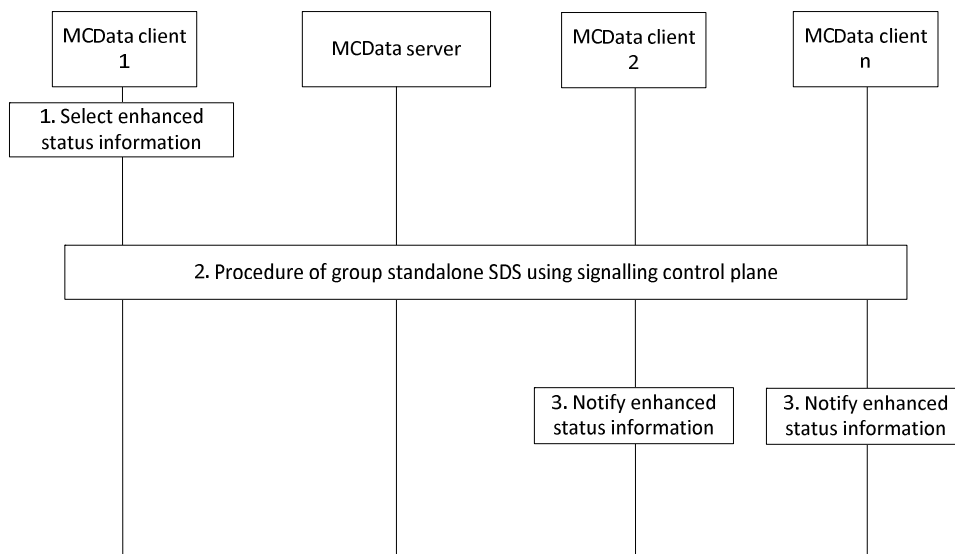


Figure 7.9.3.1.1-1: Sharing enhanced status information

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

2. The procedure of 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 MCDData users at MCDData 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 MCDData 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 MCDData group and its mapping to ProSe Layer-2 Group ID are pre-configured in MCDData client 1.
2. MCDData client 1, 2 and n are members of the same MCDData group.
3. The MCDData group is pre-configured with the possible values for enhanced status information.

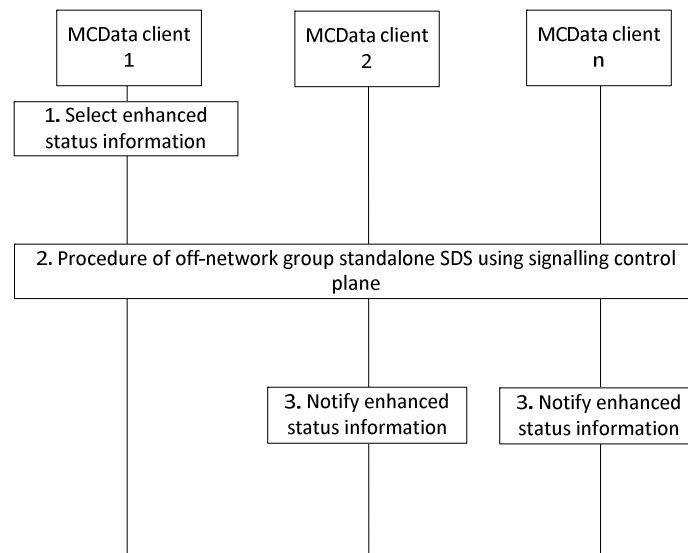


Figure 7.9.4.1.1-1: Sharing enhanced status information

1. The user at MCDData client 1 selects the MCDData group to share the enhanced status information. The user also selects the value of the status information to be shared from the list of pre-configured status values available for the MCDData group.
2. The procedure of off-network group standalone SDS using signalling control plane as described in subclause 7.4.3.3, is used to deliver the enhanced status information.
3. The MCDData users at MCDData client 2 and n are notified of the enhanced status information.

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

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

- The MC service client is the MCDData client;
- The MC service server is the MCDData server;

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

7.11 User authentication and authorization for MCDData service

NOTE: Flow 7.11-1 is a high level user authentication and authorization flow. 3GPP TS 33.180 [13] defines the specific user authentication and authorization architecture required by the MCDData service in order to realize the MCDData user authentication and authorization requirements as defined in 3GPP TS 22.280 [2].

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

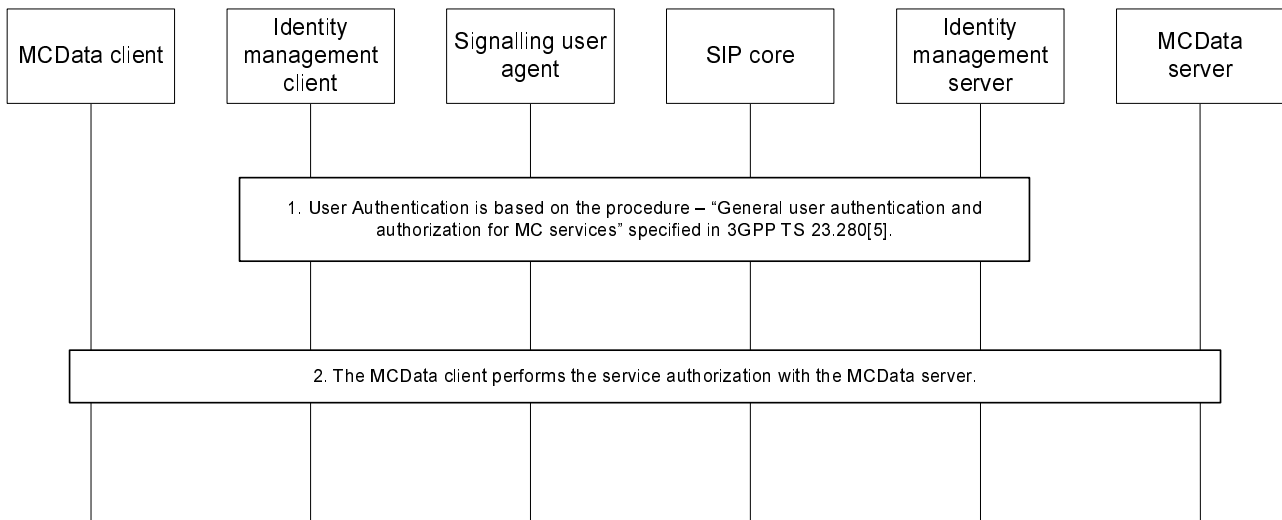


Figure 7.11-1: MCDData user authentication and registration, single domain

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

Annex A (normative): MCDData related configuration data

A.1 General

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

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

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

The columns in the tables have the following meanings:

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

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

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

A.2 MCDData UE configuration data

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

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

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

Reference	Parameter description
	Short data service
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous SDS transactions (Nc4)
[R-5.4.2-004] of 3GPP TS 22.280 [2]	> Requested presentation priority of SDS messages received (see NOTE 1)
	File distribution
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous file distribution transactions (Nc4)
	Transmission control
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous data transmissions (Nc4)
[R-5.4.2-003] of 3GPP TS 22.280 [2]	> Maximum number of data transmissions (Nc5) in a group
	Reception control
[R-5.4.2-002] of 3GPP TS 22.280 [2]	> Maximum number of simultaneous data receptions (Nc4)
[R-5.4.2-003] of 3GPP TS 22.280 [2]	> Maximum number of data receptions (Nc5) in a group
NOTE:	Priority of SDS messages includes enhanced status updates, since enhanced status updates utilise the SDS mechanism.

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

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

A.3 MCDData user profile configuration data

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

Tables A.3-1 and A.3-2 contain the 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	MCDData UE	MCDData Server	Configuration management server	MCDData user database
Subclause 5.2.11 of 3GPP TS 23.280 [5]	MCDData identity (MCDData ID)	Y	Y	Y	Y
3GPP TS 33.180 [13]	KMSUri for security domain of MCDData ID (see NOTE 1)	Y	Y	Y	Y
Subclause 5.2.11 of 3GPP TS 23.280 [5]	Pre-selected MCDData user profile indication (see NOTE 2)	Y	Y	Y	Y
Subclause 5.2.11 of 3GPP TS 23.280 [5]	MCDData user profile index	Y	Y	Y	Y
Subclause 5.2.11 of 3GPP TS 23.280 [5]	MCDData user profile name	Y	Y	Y	Y
[R-5.17-007], [R-6.13.4-002] of 3GPP TS 22.280 [2]	User profile status (enabled/disabled)		Y	Y	Y
[R-5.7-001], [R-6.9-003] of 3GPP TS 22.280 [2]	Authorised to create and delete aliases of an MCDData user and its associated user profiles.			Y	Y
[R-5.7-002], [R-6.9-003] of 3GPP TS 22.280 [2]	Alphanumeric aliases of user	Y	Y	Y	Y
[R-5.1.1-005], [R-5.9-001] of 3GPP TS 22.280 [2]	Participant type of the user	Y	Y	Y	Y
[R-5.1.8-006], [R-5.3-002], [R-5.9-001], [R-5.16.2-001], [R-5.16.2-002] of 3GPP TS 22.280 [2]	User's Mission Critical Organization (i.e. which organization a user belongs to)	Y	Y	Y	Y
[R-5.2.2-003] of 3GPP TS 22.280 [2]	Authorisation to create a group-broadcast group			Y	Y
[R-5.2.2-003] of 3GPP TS 22.280 [2]	Authorisation to create a user-broadcast group			Y	Y
[R-5.6.2.4.1-002] of 3GPP TS 22.280 [2]	Authorised to activate MCDData emergency alert	Y	Y	Y	Y
[R-5.6.2.4.1-004] [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 MCDData 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 MCDData 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 MCDData users this MCDData user is authorized to initiate a one-to-one communication				
	>> MCDData ID	Y	N	Y	Y
	>> Discovery Group ID	Y	N	Y	Y
	>> User info ID (as specified in 3GPP TS 23.303 [7])	Y	N	Y	Y

	>> KMSUri for security domain of MCDData ID (see NOTE 1)	Y	Y	Y	Y
	File distribution				
[R-5.3.2-010] of 3GPP TS 22.282 [3] and 3GPP TS 33.180 [13]	> List of MCDData users this MCDData user is allowed to cancel distribution of files being sent or waiting to be sent				
	>> MCDData ID	Y	Y	Y	Y
	>> KMSUri for security domain of MCDData ID (see NOTE 1)	Y	Y	Y	Y
	Transmission and reception control				
[R-6.2.2.1-001] of 3GPP TS 22.282 [3]	> Whether the MCDData user is permitted to transmit data	Y	Y	Y	Y
[R-6.2.3-005] of 3GPP TS 22.282 [3]	> Maximum amount of data that the MCDData user can transmit in a single request during one-to-one communication	Y	Y	Y	Y
[R-6.2.3-005] and [R-6.3.1.2-008] of 3GPP TS 22.282 [3]	> Maximum amount of time that the MCDData user can transmit in a single request during one-to-one communication	Y	Y	Y	Y
[R-6.2.3-001] of 3GPP TS 22.282 [3]	> List of MCDData users this MCDData user is allowed to request the release of an ongoing transmission that this MCDData user is participating in				
	>> MCDData ID	Y	Y	Y	Y
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 MCDData user's set of MCDData user profiles, only one MCDData user profile shall be indicated as being the pre-selected MCDData user profile.					

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

Reference	Parameter description	MCDData UE	MCDData Server	Configuration management server	MCDData user database
[R-5.1.5-001], [R-5.1.5-002], [R-5.10-001], [R-6.4.7-002], [R-6.8.1-008], [R-6.7.4-002] of 3GPP TS 22.280 [2]	List of on-network MCDData groups for use by an MCDData user				
	> MCDData Group ID	Y	Y	Y	Y
	> 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 MCDData service authorization for the user				
	> MCDData Group ID	Y	Y	Y	Y
[R-6.4.2-006] of 3GPP TS 22.280 [2]	Authorisation of an MCDData user to request a list of which MCDData groups a user has affiliated to		Y	Y	Y
[R-6.4.6.1-002], [R-6.4.6.1-003] of 3GPP TS 22.280 [2]	Authorisation to change affiliated groups of other specified user(s)		Y	Y	Y
[R-6.4.6.2-001], [R-6.4.6.2-002] of 3GPP TS 22.280 [2]	Authorisation to recommend to specified user(s) to affiliate to specific group(s)		Y	Y	Y
[R-6.6.1-004] of 3GPP TS 22.280 [2]	Authorisation to perform regrouping	Y	Y	Y	Y
[R-6.7.2-001] of 3GPP TS 22.280 [2]	Presence status is available/not available to other users	Y	Y	Y	Y
[R-6.7.1-002], [R-6.7.2-002] of 3GPP TS 22.280 [2]	List of MCDData users that MCDData user is authorised to obtain presence of				
	> MCDData IDs	Y	Y	Y	Y
[R-6.8.7.4.2-001], [R-6.8.7.4.2-002] of 3GPP TS 22.280 [2]	Authorisation of a user to cancel an emergency alert on any MCDData UE of any user		Y	Y	Y
[R-6.13.4-001] of 3GPP TS 22.280 [2]	Authorisation for an MCDData user to enable/disable an MCDData user		Y	Y	Y
[R-6.13.4-003], [R-6.13.4-005], [R-6.13.4-006], [R-6.13.4-007] of 3GPP TS 22.280 [2]	Authorisation for an MCDData user to (permanently /temporarily) enable/disable a UE		Y	Y	Y
[R-7.14-002], [R-7.14-003] of 3GPP TS 22.280 [2]	Authorization for manual switch to off-network while in on-network	Y	Y	Y	Y
[R-5.1.5-004] of 3GPP TS 22.280 [2]	Limitation of number of affiliations per user (N2)	N	Y	Y	Y
[R-6.4.6.1-001], [R-6.4.6.1-004] of 3GPP TS 22.280 [2]	List of MCDData users whose selected groups are authorized to be remotely changed	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 MCDData groups				
	>> MCDData 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 MCDData 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 MCDData 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 3GPP TS 23.280 [5].					
NOTE 2: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5].					
NOTE 3: The use of this parameter by the MCDData UE is outside the scope of the present document.					

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

Reference	Parameter description	MCDData UE	MCDData Server	Configuration management server	MCDData user database
[R-7.2-003], [R-7.6-004] of 3GPP TS 22.280 [2]	List of off-network MCDData groups for use by this MCDData user				
	> MCDData Group ID	Y	N	Y	Y
	> 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 3GPP TS 23.280 [5].					
NOTE 2: If this parameter is absent, the KMSUri shall be that identified in the initial MC service UE configuration data (on-network) configured in table A.6-1 of 3GPP TS 23.280 [5].					
NOTE 3: The use of this parameter by the MCDData UE is outside the scope of the present document.					

A.4 MCDData related Group configuration data

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

Parameters specified in table A.4-1 are child parameters of the "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	MCDData UE	MCDData Server	Group management server
[R-6.4.5-001], [R-6.4.5-003] of 3GPP TS 22.280 [2]	>> Authorisation of a user to request a list of affiliated members of a group	Y	Y	Y
[R-5.1.7-002], [R-6.2.2-001], [R-6.6.2.2-006], [R-6.8.7.2-003] of 3GPP TS 22.280 [2]	>> Priority of the group	N	Y	Y
	>> 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	N	Y	Y

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

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

A.5 MCDData service configuration data

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

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

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

Reference	Parameter description	MCDData UE	MCDData Server	Configuration management server
	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 payload data size for SDS over signalling control plane (NOTE)	Y	Y	Y
	> Maximum data size for FD	Y	Y	Y
[R-6.2.2.1-002b]	> Maximum data size for auto-receive	N	Y	Y
NOTE: The maximum payload data size for SDS over signalling control plane shall be less than or equal to the maximum data size for SDS.				

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 MCDData

B.1 Overview of transmission control process

The MCDData server may receive several simultaneous requests for data transmission, which may be associated with different types of communication e.g. group, private, 1-to-many. For each communication, 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 MCDData user, or stored in the network repository and a corresponding URL is delivered. The end-to-end transmission control process is illustrated in figure B.1-1.

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

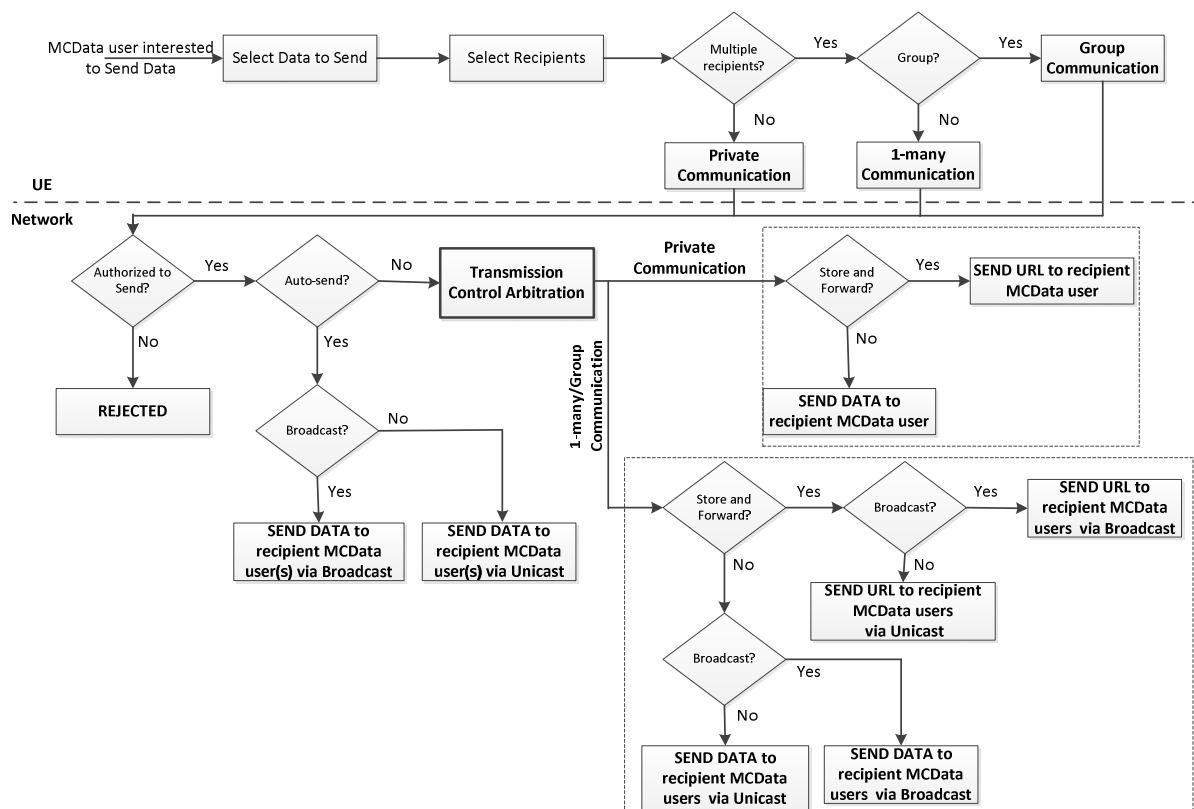


Figure B.1-1: Transmission control process

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 MCDData 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 MCDData 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 MCDData 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 MCDData service control of access.

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

When the MCDData UE requires to access an application to be used with the additional level of security, the local application within the MCDData UE commences access. If the policy allows use of the MCDData service IP data access APN, then the MCDData 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	MCDData correction of reference	14.1.0
2017-03	SA#75	SP-170071	0010		F	Alignment of business relationships, identities, and application of functional model to deployments	14.1.0
2017-03	SA#75	SP-170071	0011	3	F	file download editorials	14.1.0
2017-03	SA#75	SP-170071	0013	1	F	Off-network conversation management	14.1.0
2017-03	SA#75	SP-170071	0014	1	D	Editorial corrections	14.1.0
2017-03	SA#75	SP-170071	0015	1	F	Resolving EN in Scope	14.1.0
2017-03	SA#75	SP-170071	0016	5	F	Resolving EN in Functional model	14.1.0
2017-03	SA#75	SP-170071	0017	1	F	Resolving EN in SDS procedures	14.1.0
2017-03	SA#75	SP-170071	0018		F	Referring generic procedures from CFA	14.1.0
2017-03	SA#75	SP-170071	0020	2	F	Conversation management definitions	14.1.0
2017-03	SA#75	SP-170071	0021	2	F	Disposition alignments and corrections in SDS and FD	14.1.0
2017-03	SA#75	SP-170071	0022	1	F	Tx and Rx control procedure corrections	14.1.0
2017-03	SA#75	SP-170071	0025	1	F	MCDData functional model alignment	14.1.0
2017-03	SA#75	SP-170071	0027	1	F	Moving configuration data to on-network only	14.1.0
2017-03	SA#75	SP-170071	0028	3	F	Resolve SDS on-network information flows EN	14.1.0
2017-03	SA#75	SP-170071	0030	1	F	Resolve FD information flows EN	14.1.0
2017-03	SA#75	SP-170071	0031	2	F	Adding end-to-end encryption requirements	14.1.0
2017-03	SA#75	SP-170071	0032	1	F	Resolve transmission control information flows EN	14.1.0
2017-03	SA#75	SP-170071	0033	2	F	Resolve conversation management EN	14.1.0
2017-03	SA#75	SP-170071	0034	1	F	Addition of definition for MCDData ID	14.1.0
2017-03	SA#75	SP-170071	0035		F	Addition of definition for MCDData ID	14.1.0
2017-03	SA#75	SP-170071	0036	3	F	Off-network information flows for SDS	14.1.0
2017-03	SA#75	SP-170071	0037	1	F	Resolve communication release information flows EN	14.1.0
2017-03	SA#75	SP-170071	0038	1	F	Conditions for using SDS media plane	14.1.0
2017-06	SA#76	SP-170392	0039	2	F	Correction on MCDData reference points when using MBMS	14.2.0
2017-06	SA#76	SP-170392	0048		D	Additions to Definition and Abbreviations	14.2.0
2017-06	SA#76	SP-170392	0049	2	F	Clarifications to section 5 Architecture requirements	14.2.0
2017-06	SA#76	SP-170392	0051	1	F	Clarifications to section 6.5.1 that SDS Distribution function in MCDData server talks to SDS function in MCDData client not UE	14.2.0
2017-06	SA#76	SP-170392	0052		F	Clarifications to section 6.5.3.1.2	14.2.0
2017-06	SA#76	SP-170392	0054	1	D	Correct wrong reference in section 7.2	14.2.0

2017-06	SA#76	SP-170392	0056	3	F	Correct the MCDData data disposition notification IEs	14.2.0
2017-06	SA#76	SP-170392	0058	1	D	Consistent use of pre-condition in section 7.4.2.2.2	14.2.0
2017-06	SA#76	SP-170392	0059	1	F	Inconsistent use of MCDData group ID or list of recipients in request	14.2.0
2017-06	SA#76	SP-170392	0061	3	F	Content reference URL should be a mandatory IE when uploading a file	14.2.0
2017-06	SA#76	SP-170392	0062	5	F	Addition of new configuration and miscellaneous corrections	14.2.0
2017-06	SA#76	SP-170392	0063	5	F	Addition of identity management server address per group	14.2.0
2017-06	SA#76	SP-170392	0064		F	Correction on sending data with mandatory download	14.2.0
2017-06	SA#76	SP-170392	0070	2	F	Inclusion of KMSUri to allow multiple security domains	14.2.0
2017-06	SA#76	SP-170392	0071	4	F	Clarification to Auto-send	14.2.0
2017-06	SA#76	SP-170392	0076		F	Corrections to Group configuration data for all MC services	14.2.0
2017-06	SA#76	SP-170392	0078	2	F	CR to 23.282 on Auto-receive	14.2.0
2017-09	SA#77	S6-170681	0082	1	F	File size check for FD	14.3.0
2017-09	SA#77	SP-170681	0084	1	F	Correction to configuration for Auto-receive parameter	14.3.0
2018-01	SA#78	SP-170889	0093	2	F	PSI configuration for MCDData service	14.4.0
2018-04	SA#79	SP-180148	0098	1	F	Correction of security specification references	14.5.0
2018-04	SA#79	SP-180148	0102	1	F	Payload size limit for standalone SDS over signalling control plane	14.5.0
2018-04	SA#79	SP-180148	0106	1	F	Duplicated procedure name for MCDData Group SDS	14.5.0
2018-06	SA#80	SP-180367	0108		F	Clarification for presentation priority in MCDData UE configuration	14.6.0

History

Document history		
V14.1.0	May 2017	Publication
V14.2.0	July 2017	Publication
V14.3.0	October 2017	Publication
V14.4.0	January 2018	Publication
V14.5.0	April 2018	Publication
V14.6.0	July 2018	Publication