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Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	10
1 Scope	11
2 References	11
3 Definitions, symbols and abbreviations	12
3.1 Definitions	12
3.2 Symbols.....	13
3.3 Abbreviations	13
4 Introduction	13
5 Architectural requirements	13
5.1 Media routing requirements	13
5.2 MCVideo group affiliation and MCVideo group de-affiliation	14
5.3 Device inventory requirements.....	14
5.4 Device discovery requirements (off-network).....	14
5.5 Bearer management.....	14
5.5.1 General.....	14
5.5.2 EPS bearer considerations.....	14
5.5.3 EPS unicast bearer considerations for MCVideo.....	14
5.5.4 MBMS bearer management.....	15
5A Involved business relationships.....	15
6 MCVideo Functional model.....	15
6.1 Functional model description.....	15
6.1.1 On-network functional model.....	15
6.1.2 Off-network functional model	16
6.2 Functional entities description.....	16
6.2.1 General.....	16
6.2.2 MCVideo service application plane.....	16
6.2.2.1 General	16
6.2.2.2 Common services core	16
6.2.2.3 MCVideo application service.....	16
6.2.2.3.1 MCVideo client	16
6.2.2.3.2 MCVideo server	17
6.2.2.3.3 Media distribution function	17
6.2.2.3.4 Media mixer	17
6.2.2.3.5 MCVideo user database.....	18
6.2.2.3.6 Transmission control server.....	18
6.2.2.3.7 Transmission control participant	18
6.2.2.3.8 MC gateway server.....	18
6.3 Reference points	18
6.3.1 Reference point MCVideo-1 (between the MCVideo client and the MCVideo server)	18
6.3.2 Reference point MCVideo-2 (between the MCVideo server and the MCVideo user database).....	18
6.3.3 Reference point MCVideo-3 (between the MCVideo server and the MCVideo server and between the MCVideo server and the MC gateway server).....	19
6.3.4 Reference point MCVideo-4 (between the transmission control participant and the transmission control server).....	19
6.3.4A Reference point MCVideo-5 (unicast between the media distribution function and the EPS)	19
6.3.4B Reference point MCVideo-6 (between the MCVideo server and the EPS)	19
6.3.5 Reference point MCVideo-7 (between the media distribution function and the media mixer)	19
6.3.6 Reference point MCVideo-8 (between the media distribution function and the media mixer)	19

6.3.7	Reference point MCVideo-9 (between the transmission control participant and the transmission control server).....	20
6.3.8	Reference point MCVideo-10 (between the MC gateway server and the MC gateway server in a different MCVideo system)	20
6A	Identities	20
6B	Application of functional model to deployments	20
7	Procedures and information flows.....	20
7.1	Group call.....	20
7.1.1	General.....	20
7.1.2	On-network group call	20
7.1.2.1	General	20
7.1.2.2	Information flows for group call in on-network.....	20
7.1.2.2.1	Group call request (MCVideo client – MCVideo server).....	20
7.1.2.2.2	Group call request (MCVideo server – MCVideo client).....	21
7.1.2.2.3	Group call response (MCVideo server – MCVideo client)	21
7.1.2.2.4	Group call response (MCVideo client – MCVideo server)	21
7.1.2.2.5	Group call release request (MCVideo server – MCVideo client).....	22
7.1.2.2.6	Group call release request (MCVideo client – MCVideo server).....	22
7.1.2.2.7	Group call release response (MCVideo client – MCVideo server)	22
7.1.2.2.8	Group call rejoin request (MCVideo client – MCVideo server)	22
7.1.2.2.9	Group call rejoin response (MCVideo server – MCVideo client)	23
7.1.2.2.10	Group join request (MCVideo client – MCVideo server)	23
7.1.2.2.11	Group join response (MCVideo server – MCVideo client).....	23
7.1.2.2.12	Group call leave request (MCVideo server – MCVideo client)	24
7.1.2.2.12a	Group call leave request (MCVideo client – MCVideo server)	24
7.1.2.2.13	Group call leave response (MCVideo client – MCVideo server).....	24
7.1.2.2.13a	Group call leave response (MCVideo server – MCVideo client).....	25
7.1.2.2.14	MCVideo emergency alert request	25
7.1.2.2.15	MCVideo emergency alert response.....	25
7.1.2.2.16	MCVideo emergency alert cancel request.....	26
7.1.2.2.17	MCVideo emergency alert cancel response.....	26
7.1.2.2.18	MCVideo emergency group call request.....	26
7.1.2.2.19	MCVideo emergency group call response.....	27
7.1.2.2.20	MCVideo in-progress emergency group state cancel request.....	27
7.1.2.2.21	MCVideo in-progress emergency group state cancel response	28
7.1.2.2.22	MCVideo imminent peril group call request	28
7.1.2.2.23	MCVideo imminent peril group call response.....	28
7.1.2.2.24	MCVideo imminent peril group call cancel request	28
7.1.2.2.25	MCVideo imminent peril group call cancel response.....	29
7.1.2.3	Group call within one MC system.....	29
7.1.2.3.1	Group call models.....	29
7.1.2.3.1.1	Pre-arranged group call.....	29
7.1.2.3.1.2	Chat group call.....	34
7.1.2.3.2	Exiting group call due to de-affiliation.....	40
7.1.2.3.3	MCVideo user leaving a group call	41
7.1.2.4	Broadcast group call.....	41
7.1.2.4.1	General	41
7.1.2.4.2	Common broadcast group call procedure	42
7.1.2.5	Emergency and imminent peril procedures.....	42
7.1.2.5.1	MCVideo emergency group call.....	42
7.1.2.5.1.1	MCVideo emergency group call commencement.....	42
7.1.2.5.1.2	MCVideo group call upgraded to an MCVideo emergency group call.....	44
7.1.2.5.1.3	MCVideo in-progress emergency group state cancel	46
7.1.2.5.2	MCVideo imminent peril group call.....	48
7.1.2.5.2.1	MCVideo imminent peril group call commencement.....	48
7.1.2.5.2.2	Imminent peril group call upgrade.....	50
7.1.2.5.2.3	MCVideo imminent peril group call cancel.....	52
7.1.2.6	MCVideo emergency alert	53
7.1.2.6.1	General	53
7.1.3	Off-network group communications	53

7.1.3.1	General	53
7.1.3.2	Information flows for off-network group communications	53
7.1.3.2.1	Group communication announcement	53
7.1.3.2.2	Group communication answer response	54
7.1.3.2.3	MCVideo upgrade to emergency group communication	54
7.1.3.2.4	MCVideo emergency group communication cancel	55
7.1.3.2.5	MCVideo upgrade to imminent peril group communication	55
7.1.3.2.6	MCVideo imminent peril group communication cancel	55
7.1.3.2.7	MCVideo emergency alert announcement	55
7.1.3.2.8	MCVideo emergency alert cancel announcement	56
7.1.3.3	Group communication setup	56
7.1.3.3.1	General	56
7.1.3.3.2	Procedure	56
7.1.3.4	Passive join to group communication	58
7.1.3.4.1	General	58
7.1.3.4.2	Procedure	58
7.1.3.5	Active join to group communication	59
7.1.3.5.1	General	59
7.1.3.5.2	Procedure	59
7.1.3.6	Broadcast group communication	60
7.1.3.7	Group communication release due to inactivity	61
7.1.3.8	Emergency and imminent peril procedures	61
7.1.3.8.1	Emergency group communication	61
7.1.3.8.2	MCVideo imminent peril	62
7.1.3.9	MCVideo emergency alert	63
7.1.3.9.1	General	63
7.2	Private call	63
7.2.1	General	63
7.2.2	Private call on-network	63
7.2.2.1	General	63
7.2.2.2	Information flows for private call in on-network	63
7.2.2.2.1	MCVideo private call request (MCVideo client – MCVideo server)	63
7.2.2.2.2	MCVideo private call request (MCVideo server – MCVideo client)	64
7.2.2.2.3	MCVideo private call response (MCVideo client – MCVideo server)	64
7.2.2.2.4	MCVideo private call response (MCVideo server – MCVideo client)	65
7.2.2.2.5	MCVideo call end request	65
7.2.2.2.6	MCVideo emergency private call request (MCVideo client to MCVideo server)	65
7.2.2.2.7	MCVideo emergency private call request (MCVideo server to MCVideo client)	66
7.2.2.2.8	Emergency MCVideo private call response (MCVideo client – MCVideo server)	66
7.2.2.2.9	Emergency MCVideo private call response (MCVideo server – MCVideo client)	67
7.2.2.3	Private call within one MC system	67
7.2.2.3.1	Private call setup in automatic commencement mode	67
7.2.2.3.2	Private call setup in manual commencement mode	69
7.2.2.3.2.1	Description	69
7.2.2.3.2.2	Procedure	69
7.2.2.3.3	Private call release	71
7.2.2.3.3.1	Client initiated	71
7.2.2.3.3.2	Server initiated	72
7.2.2.4	MCVideo emergency private call	73
7.2.2.4.1	MCVideo emergency private call commencement	73
7.2.2.4.2	MCVideo private call emergency upgrade	74
7.2.3	Off-network private communications	75
7.2.3.1	General	75
7.2.3.2	Information flows for off-network private communications	76
7.2.3.2.1	Private communication request	76
7.2.3.2.2	Private communication answer response	76
7.2.3.2.3	Private communication release request	76
7.2.3.2.4	Private communication release response	77
7.2.3.3	Use of ProSe for off-network private communications	77
7.2.3.4	Automatic commencement private communication	77
7.2.3.4.1	General	77
7.2.3.4.2	Procedure	78

7.2.3.5	Manual commencement private communication.....	79
7.2.3.5.1	General	79
7.2.3.5.2	Procedure – Communication accepted	79
7.2.3.5.3	Procedure – Communication rejected/ignored	81
7.2.3.6	Private communication release.....	82
7.2.3.6.1	General	82
7.2.3.6.2	Procedure.....	82
7.3	Video pull.....	83
7.3.1	General.....	83
7.3.2	On-network video pull.....	83
7.3.2.1	General	83
7.3.2.2	Information flows for on-network video pull.....	83
7.3.2.2.1	MCVideo pull from server request	84
7.3.2.2.2	MCVideo pull from server response.....	84
7.3.2.2.3	MCVideo pull from server complete request	84
7.3.2.2.4	MCVideo pull from server complete response	84
7.3.2.3	One-to-one video pull	85
7.3.2.3.1	General	85
7.3.2.3.2	One-to-one video pull – call setup.....	85
7.3.2.3.3	One-to-one video pull – call release	86
7.3.2.4	One-from-server video pull.....	86
7.3.2.4.1	General	86
7.3.2.4.2	Procedure.....	86
7.3.3	Off-network video pull	87
7.3.3.1	General	87
7.3.3.2	Information flows for off-network video pull	88
7.3.3.3	Video pull to self.....	88
7.3.3.3.1	General	88
7.3.3.3.2	Procedure.....	88
7.4	Video push.....	90
7.4.1	General.....	90
7.4.2	On-network video push.....	90
7.4.2.1	General.....	90
7.4.2.2	Information flows for on-network video push.....	90
7.4.2.2.1	Remote video push request.....	90
7.4.2.2.2	Remote video push response	91
7.4.2.2.3	Remote video push release request.....	91
7.4.2.2.4	MCVideo push to server request	92
7.4.2.2.5	MCVideo push to server response.....	92
7.4.2.2.6	MCVideo push to server complete request.....	92
7.4.2.2.7	MCVideo push to server complete response	93
7.4.2.3	One-to-one video push	93
7.4.2.3.1	General	93
7.4.2.3.2	One-to-one video push – call setup	93
7.4.2.3.3	One-to-one video push – call release.....	94
7.4.2.4	One-to-server video push	94
7.4.2.4.1	General	94
7.4.2.4.2	Procedure.....	94
7.4.2.5	Remotely initiated video push.....	96
7.4.2.5.1	General	96
7.4.2.5.2	Remotely initiated video push – call setup	96
7.4.2.5.3	Remotely initiated video push – call release by authorized user	97
7.4.2.6	Remotely initiated video push to group	98
7.4.2.6.1	General	98
7.4.2.6.2	Remotely initiated video push to group – call setup.....	98
7.4.2.6.3	Remotely initiated video push to group – call release by authorized user.....	99
7.4.3	Off-network video push	100
7.4.3.1	General	100
7.4.3.2	Information flows for off-network video push.....	100
7.4.3.2.1	Remote video push request.....	100
7.4.3.2.2	Video push trying response	100
7.4.3.2.3	Notification of video push	100

7.4.3.3	Video push to another MCVideo user	101
7.4.3.3.1	General	101
7.4.3.3.2	Procedure	101
7.4.3.4	Remotely initiated video push	102
7.4.3.4.1	General	102
7.4.3.4.2	Procedure	102
7.4.3.5	Remotely initiated video push to a group	104
7.4.3.5.1	General	104
7.4.3.5.2	Procedure	104
7.5	Capability information sharing	105
7.5.1	General	105
7.5.2	On-network capability information sharing	105
7.5.2.1	General	105
7.5.2.2	Information flows for on-network capability information sharing	105
7.5.2.2.1	Update MCVideo capabilities info request	105
7.5.2.2.2	Update MCVideo capabilities info response	106
7.5.2.2.3	Get MCVideo capabilities info request	106
7.5.2.2.4	Get MCVideo capabilities info response	106
7.5.2.2.5	Subscribe MCVideo capabilities info request	106
7.5.2.2.6	Subscribe MCVideo capabilities info response	107
7.5.2.2.7	Notify MCVideo capabilities info request	107
7.5.2.2.8	Notify MCVideo capabilities info response	107
7.5.2.3	Update MCVideo capabilities information at the MCVideo server	107
7.5.2.4	Retrieve MCVideo capabilities information by the MCVideo client	108
7.5.2.5	Subscription and notification for MCVideo capabilities information	108
7.5.3	Off-network capability information sharing	109
7.5.3.1	General	109
7.5.3.2	Information flows for Off-network capability information sharing	110
7.5.3.2.1	Capability request	110
7.5.3.2.2	Capability announcement	110
7.5.3.2.3	Activity status request	110
7.5.3.2.4	Activity status announcement	111
7.5.3.3	Periodic capability announcements	111
7.5.3.3.1	General	111
7.5.3.3.2	Procedure	111
7.5.3.4	Request capabilities from client(s)	112
7.5.3.4.1	General	112
7.5.3.4.2	Request clients with particular capabilities	112
7.5.3.4.3	Request capabilities from a particular client	113
7.5.3.5	Request activity status from client(s)	114
7.5.3.5.1	General	114
7.5.3.5.2	Request activity status of group members	114
7.5.3.5.3	Request activity status from a particular client	115
7.6	Ambient viewing call	116
7.6.1	General	116
7.6.2	Information flows for ambient viewing call	116
7.6.2.1	Ambient viewing call request	116
7.6.2.2	Ambient viewing call response	117
7.6.2.3	Ambient viewing call release request	117
7.6.2.4	Ambient viewing call release response	117
7.6.2.5	Ambient viewing call release notification	118
7.6.3	Procedures	118
7.6.3.1	Remotely initiated ambient viewing call setup procedure	118
7.6.3.2	Locally initiated ambient viewing call setup procedure	119
7.6.3.3	Ambient viewing call release – server initiated	120
7.6.3.4	Ambient viewing call release – "viewing" user initiated	121
7.6.3.5	Ambient viewing call release – "viewed to" user initiated	122
7.7	Transmission control	123
7.7.1	Transmission control for on-network MCVideo service	123
7.7.1.1	General	123
7.7.1.2	Information flows for transmission control for on-network	123
7.7.1.2.1	General	123

7.7.1.2.2	Transmit media request	123
7.7.1.2.3	Transmit media granted	124
7.7.1.2.4	Transmit media rejected	124
7.7.1.2.5	Media transmission notification	124
7.7.1.2.6	Receive media request	124
7.7.1.2.7	Receive media response	125
7.7.1.2.8	Media reception notification	125
7.7.1.2.9	Queue position info	125
7.7.1.2.10	Transmission revoked	125
7.7.1.2.11	Queue position request	126
7.7.1.2.12	Transmit media cancel request	126
7.7.1.2.13	Transmit media cancel response	126
7.7.1.2.14	Transmit media cancel request notify	126
7.7.1.2.15	Transmit media end request	127
7.7.1.2.16	Transmit media end response	127
7.7.1.2.17	Remote transmit media request	127
7.7.1.2.18	Remote transmit media response	127
7.7.1.2.19	Remote transmit media end request	128
7.7.1.2.20	Remote transmit media cancel response	128
7.7.1.2.21	Media reception end request	128
7.7.1.2.22	Media reception end response	128
7.7.1.2.23	Media reception override notification	129
7.7.1.2.24	Transmit media end notify	129
7.7.1.3	Transmission control within one MC system for MCVideo service	129
7.7.1.3.1	Transmission control during an MCVideo session	129
7.7.1.3.2	Reception control during an MCVideo session	130
7.7.1.3.2A	End media reception – receiving user initiated	132
7.7.1.3.2B	End media reception – transmission control server initiated	132
7.7.1.3.2C	Reception control on overridden – mandatory mode	133
7.7.1.3.2D	Reception control on overridden – negotiated mode	134
7.7.1.3.3	Transmission revoke during an MCVideo session	135
7.7.1.3.4	Queue position during an MCVideo session	136
7.7.1.3.5	Transmit media request cancellation from the video transmission queue	137
7.7.1.3.5.1	Transmit media request cancellation from the queue - MCVideo user initiated	137
7.7.1.3.5.2	Transmit media request cancellation from the queue - transmission control server initiated ..	138
7.7.1.3.6	End a media transmission during an MCVideo session	139
7.7.1.3.6.1	End a media transmission – MCVideo user initiated	139
7.7.1.3.6.2	End a media transmission – transmission control server initiated	140
7.7.1.3.6.3	End a media transmission – remote MCVideo user initiated	141
7.7.1.3.7	Remotely initiated media transmission during an MCVideo session	142
7.7.2	Off-network transmission control	143
7.7.2.1	General	143
7.7.2.2	Information flows for off-network transmission control	143
7.7.2.2.1	Transmission request	143
7.7.2.2.2	Transmission granted	144
7.7.2.2.3	Transmission release	144
7.7.2.2.4	Transmission rejected	144
7.7.2.2.5	Transmission revoked	144
7.7.2.2.6	Transmission arbitration taken	145
7.7.2.2.7	Transmission arbitration release	145
7.7.2.3	Initializing transmission control – single arbitrator approach	145
7.7.2.3A	Initializing transmission control – self arbitration approach	146
7.7.2.4	Transmission permission granted	147
7.7.2.5	Transmission permission rejected	148
7.7.2.6	Releasing transmission permission	149
7.7.2.7	Transmission override	150
7.7.2.8	Transmission override (revoke self)	151
7.7.2.9	Transmission arbitration release	153
7.7.2.9.1	Transmission arbitration release	153
7.7.2.9.2	Transmission arbitration release with delegation	153
7.7.2.10	Simultaneous transmission requests	154
7.8	MCVideo service configuration	155

7.9	Affiliation and de-affiliation to/from MCVideo group(s)	155
7.9a	Functional alias management	156
7.10	Use of MBMS transmission (on-network)	156
7.10.1	Information flows for MBMS Transmission	156
7.10.1.1	General	156
7.10.1.2	MapGroupToBearer	156
7.10.1.3	UnmapGroupFromBearer	157
7.10.2	Use of pre-established MBMS bearers	157
7.10.3	Use of dynamic MBMS bearer establishment	157
7.10.4	Video call connect and disconnect over MBMS	158
7.10.4.1	General	158
7.10.4.2	Procedure	158
7.10.4.2.1	Call connect over MBMS	158
7.10.4.2.2	Call disconnect over MBMS	159
7.10.5	Switching from MBMS bearer to unicast bearer	160
7.11	Simultaneous session for MCVideo calls (on-network)	160
7.12	User authentication and authorization for MCVideo service	160
7.13	Support for multiple devices	161
7.14	Location information (on-network)	161
7.15	MCVideo resource management (on-network)	161
7.16	MCVideo client query	162
7.16.1	General	162
7.16.2	Information flows for MCVideo client query	162
7.16.2.1	MCVideo client query request	162
7.16.2.2	MCVideo client query response	162
7.16.3	MCVideo client query procedure	162
7.17	MCVideo adaptation during MCVideo communication	163
7.17.1	General	163
7.17.2	Information flows for MCVideo adaptation	163
7.17.2.1	MCVideo communication parameter update request	163
7.17.2.2	MCVideo communication parameter update response	164
7.17.3	MCVideo adaptation procedure	164
7.17.3.1	MCVideo adaptation during group communication procedure – transmitting client triggered	164
7.17.3.2	MCVideo adaptation during group communication procedure – receiving user triggered	165
7.17.3.3	MCVideo adaptation during private communication procedure – transmitting client triggered	166
7.17.3.4	MCVideo adaptation during group communication procedure – receiving user triggered	167
Annex A (normative):	MCVideo related configuration data	169
A.1	General	169
A.2	MCVideo UE configuration data	169
A.3	MCVideo user profile configuration data	170
A.4	MCVideo related Group configuration data	179
A.5	MCVideo service configuration data	181
Annex B (informative):	Change history	183
History	187

Foreword

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

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 - 1 presented to TSG for information;
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1 Scope

This document specifies the functional model, procedures and information flows needed for the mission critical video (MCVideo) service. Support for both MCVideo group streaming and MCVideo private streaming operating in on-network and off-network modes of operation is specified.

The corresponding service requirements are defined in 3GPP TS 22.280 [2], and 3GPP TS 22.281 [3].

The present document is applicable primarily to mission critical video service using E-UTRAN access based on the common functional architecture for mission critical services defined in 3GPP TS 23.280 [6] and the EPC architecture defined in 3GPP TS 23.401 [8].

The MCVideo 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 22.281: "Mission Critical Video services".
- [4] 3GPP TS 23.002: "Network Architecture".
- [5] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".
- [6] 3GPP TS 23.280: "Common functional architecture to support mission critical services; Stage 2".
- [7] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".
- [8] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".
- [9] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE_LTE); Stage 2".
- [10] Void
- [11] 3GPP TS 23.203: "Policy and charging control architecture".
- [12] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".
- [13] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE_LTE); MB2 reference point; Stage 3".
- [14] 3GPP TS 33.180: "Security of the mission critical service".

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].

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

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

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

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

MCVideo group home system: The mission critical system where the MCVideo group is defined.

MCVideo group host server: The MCVideo server within a mission critical system which provides centralised support for MCVideo services of an MCVideo group defined in a MCVideo group home system.

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

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

MCVideo service: A video communication service supporting applications for mission critical organizations and mission critical applications for other businesses and organizations (e.g. utilities, railways) with strong security, high availability, reliability and priority handling.

MCVideo system: The collection of applications, services, and enabling capabilities required to provide Mission Critical video for a Mission Critical Organization.

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

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

Transmission control: Video transmitting control mechanism in an MCVideo service that determines which participants have the authority to transmit video, and determines the onward downlink video transmission during an video call.

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
Mission Critical System

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.281 [3] apply:

Real Time
Real Time Video

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.280 [6] apply:

MC service client
MC service group
MC service group affiliation
MC service group de-affiliation
MC service group home system

MC service group host
 MC service ID
 MC service server

3.2 Symbols

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

Nc2

3.3 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].

E-UTRAN	Evolved Universal Terrestrial Radio Access Network
EPC	Evolved Packet Core
GCS AS	Group Communication Service Application Server
GCSE_LTE	Group Communication Service Enabler over LTE
HTTP	Hyper Text Transfer Protocol
IMS	IP Multimedia Subsystem
MC	Mission Critical
MCVideo	Mission Critical Video
MCVideo group ID	MCVideo group identity
MCVideo ID	MCVideo user identity
ProSe	Proximity-based Services
SIP	Session Initiated Protocol

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4 Introduction

ETSI TS 123 281 V16.4.0 (2021-01)

The MCVideo service supports video media communication between several users (i.e. group call), where each user has the ability to gain access to the permission to stream video in an arbitrated manner. The MCVideo service also supports private calls between two users.

The MCVideo architecture is based on the functional architecture for mission critical communication services defined in 3GPP TS 23.280 [6].

5 Architectural requirements

5.1 Media routing requirements

The video media flow for a private call shall be routed according to one of the following two options:

- a) Option 1:
 - 1) Through the primary MCVideo system if both users in the call belong to the same organisation; or
 - 2) Through the primary MCVideo system of each users, if the users in the call do not belong to the same organisation.
- b) Option 2: The video media flow may be routed locally, under the control of the primary MCVideo system, through an entity allowing the duplication of the media flow to the primary MCVideo system of each user.

The video media flow for a group call shall be routed to the group home MCVideo system.

5.2 MCVideo group affiliation and MCVideo group de-affiliation

MCVideo group affiliation shall be as specified in clause 5.2.5 of 3GPP TS 23.280 [6]. In addition, the following requirements shall be fulfilled by the MCVideo service for MCVideo users affiliated to MCVideo groups:

- MCVideo users receive notifications for MCVideo group call setup and invitations for their affiliated MCVideo group(s).
- MCVideo users select an affiliated MCVideo group to initiate a new group MCVideo call or transmit media in an existing MCVideo group call.
- MCVideo users receive media and events from their affiliated MCVideo group(s).

5.3 Device inventory requirements

The MCVideo service shall provide device inventory capabilities for MCVideo UEs. The device inventory capabilities shall include:

- device information registration;
- device information storage; and
- device information query.

5.4 Device discovery requirements (off-network)

The MCVideo service shall provide device discovery for devices as requested by the MCVideo user according to the MC service provider policy for off-network operations.

5.5 Bearer management

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5.5.1 General

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

5.5.2 EPS bearer considerations

The EPS bearer considerations specified in subclause 5.2.7.2 of 3GPP TS 23.280 [6] shall apply.

5.5.3 EPS unicast bearer considerations for MCVideo

For an MCVideo call session request, resources shall be requested utilising interaction with dynamic PCC. The MCVideo system shall request resources over Rx to a PCRF. It is recommended that the dedicated bearer(s) for video media and control of the video media (i.e. MCVideo-4 and MCVideo-7) utilise the QCI values depending on the MCVideo mode of the MCVideo call/session, as per table 5.5.3-1. For transmission and reception control signalling, the QCI value of 69 is recommended as specified in 3GPP TS 23.203 [11]. The request of resources over Rx shall include an application identifier for MCVideo in order for the PCRF to evaluate the correct QCI.

Table 5.5.3-1: QCI values to use for EPS unicast bearers for each MCVideo mode

MCVideo mode	QCI value utilised (as specified in 3GPP TS 23.203 [11])
Urgent real-time mode	67
Non-urgent real-time mode	67
Non real-time mode	4