Customized Multimedia Ringing

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Open Mobile Alliance
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1. Scope

This document describes the technical realization of the Customized Multimedia Ringing (CMR) service based on the CMR requirement document [OMA-CMR-RD] and the CMR architecture document [OMA-CMR-AD].

This document specifies the protocols, messages and data formats used for message exchanges between:

- CMR Server and CMR Client

- CMR Server and CMR Management Client

- CMR Server and Remote CMR Environment

- CMR Server and CMR Portal

- CMR Server and CMR Enabled Application

This document also describes the procedures of the CMR components and the main signalling flows of the CMR service.

2. References

2.1 Normative References

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[OMA-PRS-AD]	"Presence SIMPLE Architecture", Open Mobile Alliance™, OMA-AD-Presence_SIMPLE-V1_1, URL:http://www.openmobilealliance.org/
[OMA-XDM-AD]	"XML Document Management Architecture", Open Mobile Alliance™, OMA-AD-XDM-V1_1, URL:http://www.openmobilealliance.org/
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2.2   Informative References

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3. Terminology and Conventions

3.1   Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except "Scope" and "Introduction", are normative, unless they are explicitly indicated to be informative.

3.1.1   Additional Conventions

Explanation of the Attribute/Element in CMR tables is as follows:

- E = Elements

- 1,2,3(e.g. E1,E2,E3), etc = nesting level of the Element

- A = Attributes

- Attributes apply to the parent Element.

Each message start with a message element, noted as E.

Explanation of the Parameter cardinality in CMR Tables is as follow:

- 1 means the parameter has exactly one occurrence

- 0..1 means the parameter is either missing or has exactly one occurrence

- 0..N means the parameter has zero or more occurrences.

- 1..N means the parameter has one or more occurrences.

Informative illustration of a table:

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
Message Name	E			Indicates the name of the message.
Parameter 1	A	String	1	Indicates the name of the attribute "Parameter 1".
Parameter 2	E1	Integer	1..N	Indicates the name of the element "Parameter 2".
Parameter 3	E1	Structure	1	Indicates the name of the element "Parameter 3".
SubName of Parameter 3	A	Byte	0..1	Indicate the possible surnames of the name of the element "Parameter 3".

3.2   Definitions

CMR Client	See [OMA-CMR-AD]
CMR Enabled Application	See [OMA-CMR-AD]
CMR End User	See [OMA-CMR-AD]
CMR Management Client	See [OMA-CMR-AD]
CMR Portal	See [OMA-CMR-AD]
Remote CMR Environment	See [OMA-CMR-AD]
CMR Resource	See [OMA-CMR-AD]
CMR Resource Box	See [OMA-CMR-AD]
CMR Resource Metadata	See [OMA-CMR-AD]
CMR Resource Server	See [OMA-CMR-AD]
CMR Sever	See [OMA-CMR-AD]
CMR Subscriber	See [OMA-CMR-AD]
Content Provider	See [OMA-CMR-AD]
Personal Resource Library	See [OMA-CMR-AD]
Preference Settings	See [OMA-CMR-AD]

3.3   Abbreviations

ACL	Access Control List
CMR	Customized Multimedia Ringing
CMRBT	Customized Multimedia Ring Back Tone
CMRT	Customized Multimedia Ring Tone
CP	Content Provider
CS	Circuit Switch
DTMF	Dual Tone Multi Frequency
HTTP	HyperText Transfer Protocol
IMS	IP Multimedia Subsystem
MIME	Multipurpose Internet Mail Extensions
NGN	Next Generation Network
OMA	Open Mobile Alliance
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SOAP	Simple Object Access Protocol
SP	Service Provider
TLS	Transport Layer Security
URI	Universal Resource Identifier

4. Introduction

The Customized Multimedia Ringing (CMR) Enabler provides the customized multimedia resources instead of the traditional ring back tone or ringing tone upon a specified event, e.g. the establishment of a call, the arrival of a message or mail.

This document defines the technical framework and specifies interoperable technologies for the management of the CMR service and the delivery of the CMR service based on the CMR requirement document [OMA-CMR-RD] and the CMR architecture document [OMA-CMR-AD].

This document is organized as follows:

- Section 5 specifies the interface bindings, interface message definitions and common parameters/structures.
- Section 6 specifies the general procedures apply to SIP/IP core network and/or CS core network
- Section 7 specifies details on operations and functions of CMR components in SIP/IP core network, including CMRBT and CMRT procedures.
- Section 8 specifies details on operations and functions of CMR components in CS core network, including CMRBT procedures.
- Section 9 contains details on CMR Resource protection and security considerations between CMR components.

The CMR Enabler supports the deployment of services across different networks in a consistent and standardized way, improving service deployment flexibility, interoperability, cost, and time-to-market.

4.1   Version 1.0

Version 1.0 of the CMR Enabler addresses all of the functional requirements included in [OMA-CMR-RD] for CMR 1.0 with the following exceptions

- CMRT service is not applicable in CS core network
- Continue is not supported in CS core network for CMRBT service

The following functions are supported with some restrictions:

- In CS core network, the following functions are only supported in case the calling party and called party belong to the same CMR Server:
    - Filtering
    - Priority
    - Copy and give CMR Resource as present
    - Change between calling party and called party
- In SIP/IP core network, the following functions are only supported in case the calling party and called party belong to the same CMR Server:
    - Copy and give CMR Resource as present
    - Change between calling party and called party

5. CMR Interfaces   (Normative)

5.1   Data Types

The data types of the CMR parameters used in this specification are defined in the section "Built-in datatypes" of [XML Schema Part 2: Datatypes] specification by the W3C, as adapted by [SOAP 1.1].

5.2   Common Parameters and Structures

5.2.1   BillType

The types of charging for the CMR Subscriber. It has enumeration data type. It has the following values:

- "online" (default)
- "offline"

5.2.2   MediaType

MediaType is a string used to indicate the real meida type of a CMR Resource or CMR Resource Box. It has enumeration data type. It has the following values:

- "audio"
- "video"
- "text"
- "image"
- "vCard"

The CMR Resource of media type "video" could also include the audio content.

5.2.3   OwnerType

The types of the owner of the CMR Resource/CMR Resource Box. It has enumeration data type. It has the following values:

- "CP"
- "Subscriber"

5.2.4   ServiceId

ServiceId is a string used to uniquely identify a service. It can be an optional parameter in a message or structure. It means for default services (i.e. normal call session service) if not present. If ServiceId="All", it means for all services.

Note: the ServiceId SHOULD be provided by SPs. How to generate the ServiceId is out of scope.

5.2.5   Status

The status of CMR service,CMR Resource or CMR Resource Box . It has enumeration data type. It has the following values:

- "active" (default)
- "inactive"
- "suspended"

5.2.6   StatusCode

This section provides the numeric values and text names for status codes used in CMR messages.

Status Code	Status Description
000	Success
001	Partial success
002	Invalid SubscriberId
003	Invalid Password
004	invalid ServiceId
005	Invalid ResourceId
006	Charging fail
007	invalid parameter
008-998	reserved
999	general error
1000-	Specific status codes for different management functions defined by SP

Table 1: StatusCode

5.2.7   SubscriberType

The types of CMR Subscribers . It has enumeration data type. It has the following values:

- "individual"

- "enterprise"

5.2.8   TransactionID

TransactionID is a unique identifier for the transaction.

The TransactionID in the request message is conditional, it is mandatory when the binding protocol doesn't have the mechanism of identifying/associating the transactions. TransactionID in the request message is given by the CMR Portal/CMR Management Client.

The TransactionID in the response message is conditional; the response to a given request which contains a TransactionID MUST contain the same TransactionID.

Note: how to generate the TransactionID is out of scope.

5.2.9   FilterSetting Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
FilterFlag	A	Enumeration	1	Filter flag indicate if the CMR will be filtered. 0: filter all(don't play any CMR Resource) 1: don't play the CMR Resource if any of the filter rules below is matched. 2: don't play the CMR Resource if all the filter rules below are matched.
TimeCriterion	E	List of Structures	0..N	Certain time periods in which the subscriber would apply the filter. See the structure defined in 5.2.29.

GroupCriterion	E	Structure	0..N	Group or user criteria (structure defined in 5.2.12) by which the subscriber would apply the filter.
MediaType	E	List of Strings	0..N	MediaType filter rules by which the subscriber would apply the filter. See the description in 5.2.2.

Table 2: The FilterSetting Structure

5.2.10   GenResponse Structure

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
TransactionId	A	String	0..1	See the description in 5.2.8
StatusCode	A	Positive Integer	1	See the description in 5.2.6.
StatusDescription	A	String	0..1	Status Description
ErrorInfo	A	String	0..1	Detail information for the error conditions

Table 3: GenResponse Structure

5.2.11   GroupInfo Structure

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E	Structure	0..1	See the structure defined in 5.2.26.
GroupId	A	String	1	The group identification.
GroupName	A	String	0..1	Name of the group.

Table 4: GroupInfo Structure

5.2.12   GroupUserCriterion Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
GroupUserId	A	String	1	The identifier of a group or a particular user.
GroupType	A	Interger	1	Indicate the type of GroupUserId: - singal user - group

Table 5: The GroupUserCriterion Structure

5.2.13   IdWithType Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
PhoneId	A	String	1	The identifier or phone number of the CMR Subscriber when used in the communicaiton. It can be E.164 Number or SIP/Tel URI..
IdType	A	String	0..1	Indicate the type of the PhoneId, it could be: - E.164 (default) - Tel URI - SIP URI

Table 6: IdWithType Structure

5.2.14   LocationCriterion Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
LocationInfo	A	String	0..1	Location Information of CMR Subscriber Conditional: not required if LocationRing is TRUE.
LocationRing	A	Boolen	1	TRUE indicates that CMR Resources which are generated based on the location information of the CMR Subscriber or CMR End User are to be presented. FALSE indicates that the CMR Resources are selected based on the location information as specified by LocationInfo.

Table 7: LocationCriterion Structure

5.2.15   MemberInfo Structure

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
MemberId	E	Structure	1	The identifier or number of the member in the particular group. It could be E.164 Number or SIP/Tel URI. See the structure defined in 5.2.13.
MemberName	A	String	1	The name of the member in the particular group.

Table 8: MemberInfo Structure

5.2.16   PersonalResourceLibraryInfo Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceInList	E	Structure	1	The CMR Resrouce information. See the structure defined in 5.2.23.
Share	A	Boolean	0..1	FALSE means hide the CMR Resouce(default) TRUE means share the CMR Resouce
Status	A	Enumeration	0..1	Status of CMR Resource. See the description in 5.2.5

Table 9: PersonalResourceLibraryInfo Structure

5.2.17   PreferenceRule Structure

At least one of the following parameters SHALL be present:

- GroupUserCriterion

- TimeCriterion

- LocationCriterion

- PresenceCriterion

If more than one of the above parameters are present, it means the ResourceId is assocaited with the combined conditions.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceIdList	E	List of Strings	0..N	Identifier(s)of CMR Resource to be presented. Conditinal: not required if LocationRing or PresenceRing is TRUE.
PresentationMode	A	Enumeration	0..1	Playing mode of CMR Resources: - 1 random playing （default） - 2 sequential playing - 3 simultaneous playing
GroupUserCriterion	E	Structure	0..1	See the structure defined in 5.2.12
TimeCriterion	E	Structure	0..1	See the structure defined in 5.2.29
LocationCriterion	E	Structure	0..1	See the structure defined in 5.2.14
PresenceCriterion	E	Structure	0..1	See the structure defined in 5.2.19.

Table 10: PreferenceRule Structure

5.2.18   PreferenceRuleWithId Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
PreferenceRuleId	A	String	1	The identification of the preference rule.
PreferenceRule	E	List of Structures	0..N	See the structure defined in 5.2.17.

Table 11: PreferenceRuleWithId Structure

5.2.19   PresenceCriterion Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
PresenceInfo	A	String	0..1	Presence Information of CMR Subscriber Conditional: not required if PresenceRing is TRUE.
PresenceRing	A	Boolen	1	TRUE indicates that the CMR Resources which are generated based on the presence information of the CMR Subscriber or CMR End User are to be presented. FALSE indicates that the CMR Resources are selected based on the presence information as specified by PresenceInfo.

Table 12: PresenceCriterion Structure

5.2.20   RepInfo Structure

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
Name	A	String	1	Name of the report.
URI	A	anyURI	1	Location where the report is available.
Description	A	String	0..1	Description of the report
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E	Structure	0..1	See the structure defined in 5.2.26. Conditional: May be required for service management report

Table 13: RepInfo Structure

5.2.21   ResourceBoxInfo Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceBoxMetadata	E	Structure	1	The metadata information about CMR Resource Box. See ResouceMetadata structure in 5.2.24.
PresentationMode	A	Enumeration	0..1	Playing sequence of CMR Resources in the CMR Resource Box: - random playing (default) - circular playing
ResourcesInBox	E	List of Structures	1..N	The list of CMR Resources in the CMR Resource Box See the structure defined in 5.2.22.

Table 14: ResourceBoxInfo Structure

5.2.22   ResourceInBox Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceId	A	String	1	The identifier of CMR Resource.
ResourceName	A	String	1	The name of CMR Resource.

Table 15: ResourceInBox Structure

5.2.23   ResourceInList Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceId	A	String	1	The identifier of the CMR Resource.
IsResourceBox	A	Boolean	0..1	TRUE means the CMR Resource is a ResourceBox Default is FALSE
Name	A	String	1	The name of the CMR Resource.
Author	A	String	0..1	The author of the resource, such as the singer name of a song, a director of a clip.
Language	A	String	0..1	The language of the CMR Resource.
MediaType	A	String	1	See the description in 5.2.2.
ProviderId	A	String	0..1	The identity of the provider of the content
OwnerType	A	String	0..1	The type of the resoure provider . See the description in 5.2.3.
Price	A	String	0..1	Readable price of the CMR Resource or CMR Resource Box.

| ExpireDate | A | dateTime | 0..1 | The expire date of the CMR Resource. |

Table 16: ResourceInList Structure

5.2.24 ResourceMetadata Structure

It defines the metadata of CMR Resource or CMR Resource Box.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceId	A	String	1	Identifier of CMR Resource or CMR Resource Box.
IsResourceBox	A	Boolean	0..1	TRUE means the CMR Resource is a ResourceBox Default is FALSE.
ServiceId	A	String	0..1	See the description in 5.2.4.
MediaType	A	String	1	See the description in 5.2.2.
Format	E1	List of Strings	1..N	The codecs (e.g. H.263 Profile Level 10) of the CMR Resource media.
Name	A	String	1	The human readable name of the CMR Resource or CMR Resource Box.
Price	A	String	1	Readable price of the CMR Resource or CMR Resource Box.
CopyrightOwner	A	String	0..1	The owner of the copyright of the CMR Resource or CMR Resource Box.
ExpireDate	A	dateTime	0..1	Expire time of CMR Resource or CMR Resource Box. It means the CMR Resource or CMR Resource Box. is always active if this parameter is not present.
Status	A	Enumeration	0..1	Status of the CMR Resource or CMR Resource Box. See the description in 5.2.5.
Author	A	String	0..1	The author of the CMR Resource or CMR Resource Box, such as the singer name of a song, a director of a clip.
Language	A	String	0..1	The language of the CMR Resource or CMR Resource Box.

Table 17: ResourceMetadata Structure

5.2.25 ResourceShare Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceId	A	String	1	The identifier of the CMR Resource.
Share	A	Boolean	0..1	FALSE means hide the CMR Resouce (default) TRUE means share the CMR Resouce

<div align="center">**Table 18: ResourceShare Structure**</div>

5.2.26 ServiceType Structure

ServiceType specifies the types of CMR service.

It can be an optional parameter in a message or structure. If the ServiceType is not present, it means applicable for both CMRBT and CMRT services and for both calling and called parties.

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
CallingOrCalled	A	Enumeration	0..1	It specifies the CMR service is associated with: - both calling and called party (default) - calling party - called party
CMRBTOrCMRT	A	Enumeration	0..1	It specifies the CMR service is: - both CMRBT and CMRT service (default) - CMRBT service - CMRT service

<div align="center">**Table 19: ServiceType Structure**</div>

5.2.27 SettingPriority Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
PresentationType	A	Byte	1	Indicate the presentation type. Bit0: GroupUser Bit1: DateTime Bit2: Prensence Bit3: Location

Priority	A	Integer	1	Priority Strategy for each presentation type, e.g.
				0 high
				1 medium
				2 low
				The smaller the number, the higher the priority.

Table 20: SettingPriority Structure

5.2.28   SystemSettings Structure

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E	Structure	0..1	See the structure defined in 5.2.26.
Priority	A	Integer	0..1	The priority of the calling and called CMR Subscribers.
				- Calling party has higher priority
				- Called party has higher priority
				For CMRBT, calling party has higher priority by default
				For CMRT, called party has higher priority by default
DefaultCMRResourceId List	E	List of Strings	0..N	CMR Resources to be presented simultaneously when no CMR Resource has been specified by CMR Subscriber.
				Different media types of CMR Resources are allowed if not conflicted.

Table 21: SystemSettings Structure

Note: At least one of the Priority and DefaultCMRResourceIdList parameters SHALL present in the Update Presentation Rule Request.

5.2.29   TimeCriterion Structure

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DateTimeType	A	Enumeration	1	The time rule type:
				1 Time
				2 Specific day (year-month-day) optionally with time information
				3 Specific day of a month (e.g. 5th of the

				month) optionally with time information
				4 Specific day/month(e.g. 14th of September) optionally with time information
				5 Specific day of a week (e.g. Firday) optionally with time information
				6 Specific month (e.g May)
				7 Spefic year (e.g. 2010)
				8 Specific month/year (e.g. May 2010)
StartDateTime	A	String	1	Start date and/or time of the period
				The StartDateTime consists of a date portion and/or a time portion, where if it consists of a date portion and a time portion and if a timezone indicator is needed, the timezone indicatior is put at the end of the string.
				The time portion conforms to "time" data type format
				When TimeType=1: it conforms to "time" data type format, e.g. "08:00:00+05:00"
				When TimeType=2 : if it has only a date portion, it conforms to "date" data type format; If it has a date portion and a time protion, it conforms to "dateTime" data type format, e.g. "2009-12-20", "2009-12-01T08:00:00".
				When TimeType=3: if it has only a date portion, it conforms to "gDay" data type format; If it has a date portion and a time portion, it is concatenated by date portion (---DD) , "T", time portion with optional following time zone indicator , i.e. '---' DD 'T' hh ':' mm ':' ss ('.' s+)? (zzzzzz)?, e.g. , e.g. "---20", "---20T08:00:00".
				When TimeType=4: if it has only a date portion, it conforms "gMonthDay" data type format, if it has a date portion and a time portion, it is concatenated by date portion ("gMonthDay" data type format), "T" and time portion with optional following time zone indicator, i.e. '--' MM '-' DD 'T' hh ':' mm ':' ss ('.' s+)? (zzzzzz)? , e.g. "--12-20", "--12-20T08:00:00".
				When TimeType=5: if it has only a date portion, it conforms to the following format:
				"--W-D", where D ranges from 1-7 representing Monday to Sunday; If it has a

				date portion and a time portion, it is concatenated by date portion ("--W-D" format), "T" and time portion with optional following time zone indicator, i.e. '--W''-'D' T' hh ':' mm ':' ss ('.' s+)? (zzzzzz)?. For example, "--W-5T08:00:00" or "--W-5T08:00:00Z" refers to Friday 8 o'clock in UTC time. When TimeType=6: it conforms to "gMonth" (--MM) data type format, e.g. "--12". When TimeType=7: it conforms to "gYear" (CCYY) data type format, e.g. "2009". When TimeType=8: it conforms to "gYearMonth" (CCYY--MM) data type format, e.g. "2009-12".
EndDateTime	A	String	0..1	End date and or time of the period, used in pair with StartDateTime, it SHALL use the same format as StartDateTime It means the date time rule only applies to a particular date and/or time if it is not present

Table 22: TimeCriterion Structure

5.3 Transport Protocol Binding

5.3.1 Transport Protocol Binding for CMR-1

For CMR-1 interface, the CMR Server and the CMR Management Client SHALL support HTTP binding.

The HTTP binding between the CMR Server and the CMR Management Client SHALL relies on HTTP(S) [HTTP].

5.3.2 Transport Protocol Binding for CMR-2/CMR-3

For CMR-2/CMR-3 interfaces, different bindings SHALL be supported when deployed over different core networks.

5.3.2.1 SIP/IP Core Network Binding

When the SIP/IP core network technology is based on 3GPP IMS technology, the SIP binding SHALL be used and rely on [3GPP TS 24.182] for CMRBT and [3GPP TS 24.183] for CMRT.

When the SIP/IP core network technology is based on ITU-T NGN technology, the SIP binding SHALL be used and rely on [ITU-T Q.3610] for CMRBT and [ITU-T Q.3611] for CMRT.

5.3.2.1.1 New Tag in Session Request Message

The CMR Enabler SHALL support a new tag "g.cmr" in "Reject-Contact" header (i.e. Reject-Contact: *, +g.cmr) in SIP INVITE message.

The tag is used in CMRBT service for filtering or priority handling. The usages of the tag are described in the following filtering and priority procedures.

The tag "g.cmr" can be inserted by a CMR Client or a CMR Server.

5.3.2.1.2 SDP Attribute for CMR Service

The CMR Enabler SHALL support the following keywords in the attribute "a=keywds:" in the session-level SDP description according to [IETF RFC 4566]:

- CMRBT (i.e. a=keywds:CMRBT)

- CMRT (i.e. a=keywds:CMRT)

"a=keywds: CMRBT" is used to specify that the SDP is used by CMRBT service; "a=keywds:CMRT" is used to specify that the SDP is used by CMRT service.

5.3.2.2 CS Core Network Binding

When the CS core network technology is based on 3GPP CS domain as described in [3GPP TS 23.002], the interactions between the CMR Server and the CMR Client are through the CS domain. The CMR Server SHALL support BICC/ISUP bindings specified in [3GPP TS 23.205] sub-clause 14.10 Customized Alerting Tone; the CMR Client SHALL support Q.931 binding specified in [3GPP TS 24.008] sub-clause 5.3.6.4 (Multimedia CAT during the alerting phase of a mobile originated call).

5.3.3 Transport Protocol Binding for CMR-4

For CMR-4 interface, the CMR Server SHALL support at least one of the following bindings.

5.3.3.1 Web Services Binding

The web-service binding between the CMR Server and the CMR Enabled Application SHALL rely on [SOAP1.1] or [SOAP1.2] over HTTP(S) [HTTP].

The SOAP request SHALL be sent as the body of a HTTP(S) POST request, as defined in [SOAP1.1] or [SOAP1.2].

The SOAP response SHALL be sent as a body of the HTTP(S) response.

Both the request and the response SHALL contain a single SOAP envelope, conformant with [SOAP1.1] or [SOAP1.2].

5.3.3.2 HTTP Binding

The HTTP binding between the CMR Server and the CMR Enabled Application SHALL rely on HTTP(S) [HTTP].

5.3.4 Transport Protocol Binding for CMR-5/CMR-6/CMR-7

For CMR-5/CMR-6/CMR-7 interfaces, the CMR Server SHALL support at least one of the following bindings.

5.3.4.1 Web Services Binding

The web-service binding between the CMR Server and the CMR Portal SHALL rely on [SOAP1.1] or [SOAP1.2] over HTTP(S) [HTTP].

The SOAP request SHALL be sent as the body of a HTTP(S) POST request, as defined in [SOAP1.1] or [SOAP1.2].

The SOAP response SHALL be sent as a body of the HTTP(S) response.

Both the request and the response SHALL contain a single SOAP envelope, conformant with [SOAP1.1] or [SOAP1.2].

5.3.4.2 HTTP Binding

The HTTP binding between the CMR Server and the CMR Portal SHALL rely on HTTP(S) [HTTP].

5.3.5 HTTP headers definition

The HTTP requests over CMR-1, CMR-4, CMR-5, CMR-6 and CMR-7 SHALL use HTTP POST method.

The following optional Headers could be used in the request messages:

- the CMR Server address in the request line, per the applicable connection profile

- the Host request-header set to the hostname or IP address of the CMR Server, per the applicable connection profile

- the User-Agent request-header set to identify the host device (e.g. "vendor-model/version"), and the name and version of the CMR Management Clint/CMR Portal as initiating the request

- the Accept request-header with value "application/vnd.oma.cmr_1_0, multipart/related, multipart/mixed"

- the Content-Type entity-header with value "application/vnd.oma.cmr_1_0", "multipart/related", or "multipart/mixed", as applicable

The following optional Headers could be used in the response messages:

- the Content-Type entity-header with value "application/vnd.oma.cmr_1_0", "multipart/related", or "multipart/mixed", as applicable

5.4 CMR-1 Interface

The CMR-1 Interface is exposed by the CMR Server to the CMR Management Client for the service management, including Personal Resource Library management, CMR Resource presentation rule setting, etc.

Unless otherwise specified, the request messages are sent from the CMR Management Client to the CMR Server and the response messages are sent from the CMR Server to the CMR Management Client.

5.4.1 Group and Member Management

The CMR Subscriber is able to classify CMR End Users into different groups for which he/she can define different CMR Resources to be presented.

A CMR End User may have more than one member identities (e.g. SIP URI and Tel URI).

Depends on the CMR service which is invoked, the CMR End User can be calling party or called party. The detail procedure of how to select the CMR Resources based on the groups is defined in section 6.1.

5.4.1.1 Query Group Request and Response

5.4.1.1.1 Query Group Request

The Query Group Request message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryGroupReq	E		1	Indicate the name of the message
TransactionId	A	String	0...1	See the description in 5.2.8
SubscriberId	A	String	1	The unique identifier of the subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

Table 23: Query Group Request

5.4.1.1.2 Query Group Response

The Query Group Response message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryGroupResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information. See the structure defined in 5.2.10.
GroupInfo	E1	List of Structures	0..N	See the structure defined in 5.2.11.

Table 24: Query Group Response

5.4.1.2 Create group Request and Response

5.4.1.2.1 Create group Request

The Create Group Request message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
CreateGroupReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the subscriber.
GroupInfo	E1	Structure	1	See the structure defined in 5.2.11.

Table 25: Create group Request

5.4.1.2.2 Create Group Response

The Create Group Response message (CreateGroupResp) uses parameters defined in the GenResponse structure.

5.4.1.3 Update Group Request and Response

5.4.1.3.1 Update Group Request

The Update Group Request message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UpdateGroupReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the subscriber.
GroupInfo	E1	Structure	1	See the structure defined in 5.2.11. Only group name can be modified. The GroupId and ServiceId in the this structure are used to identify the target group, and GroupName in this structure indicates the new group name.

Table 26: Update Group Request

5.4.1.3.2 Update Group Response

The Update Group Response message (UpdateGroupResp) uses parameters as defined in the GenResponse structure.

5.4.1.4 Delete Group Request and Response

5.4.1.4.1 Delete Group Request

The Delete Group Request message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeleteGroupReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8
SubscriberId	A	String	1	The unique identifier of the subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
GroupId	A	String	1	The group identification.

Table 27: Delete Group Request

5.4.1.4.2 Delete Group Response

The Delete Group Response message (DeleteGroupResp) uses parameters as defined in the GenResponse structure.

5.4.1.5 Query Member Request and Response

5.4.1.5.1 Query Member Request

The Query Member Request message uses parameters as shown in following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryMemberReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the subscriber.
GroupId	A	String	1	The group identification.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
MemberName	A	String	0..1	The name of the member in the particular group.

Table 28: Query Member Request

5.4.1.5.2 Query Member Response

The Query Member Response message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryMemberResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information. See the structure defined in 5.2.10.
MemberInfo	E1	List of Structures	0..N	See the structure defined in 5.2.15.

Table 29: Query Member Response

5.4.1.6   Create Member Request and Response

5.4.1.6.1   Create Member Request

The Create Member Request message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
CreateMemberReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the subscriber.
GroupId	A	String	1	The group identification.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
MemberInfo	E1	List of Structures	1..N	See the structure defined in 5.2.15.

Table 30: Create Member Request

5.4.1.6.2   Create Member Response

The Create Member Response (CreateMemberResp) uses parameters as defined in the GenResponse structure.

5.4.1.7   Update Member Request and Response

5.4.1.7.1   Update Member Request

The Update Member Response uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UpdateMemberReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the subscriber.
GroupId	A	String	1	The group identification.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

| UpdateMemInfo | E1 | List of Structures | 1..N | The information about members update |
| | | | | See Table 32. |

Table 31: Update Member Request

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
MemberId	E	Structure	1	To update member's MemberId, the original MemberId must be given. See the structure defined in 5.2.13.
NewMemberId	E	Structure	0..1	The new identifier or number of the member. It could be E.164 Number or SIP/Tel URI. See the structure defined in 5.2.13
NewMemberName	A	String	0..1	The new name of the member in the particular group.

Table 32: UpdateMemInfo Structure

5.4.1.7.2 Update Member Response

The Update Member Response (UpdateMemberResp) uses parameters as defined in the GenResponse structure.

5.4.1.8 Delete Member Request and Response

5.4.1.8.1 Delete Member Request

The Delete Member Request uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeleteMemberReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberiD	A	String	1	The unique identifier of the subscriber.
GroupId	A	String	1	The group identification.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
MemberId	E1	List of Structures	1..N	The list of MemberId to be deleted. See the structure defined in 5.2.13.

Table 33: Delete Member Request

5.4.1.8.2 Delete Member Response

The Delete Member Response (DeleteMemberResp) uses parameters as defined in the GenResponse structure.

5.4.2   CMR Resource Search

5.4.2.1   Get CMR Resource List Request and Response

Get CMR Resource list can facility the CMR Subscriber to get the information of available CMR Resource list with different categories in the CMR Server.

5.4.2.1.1   Get CMR Resource List Request

The Get CMR Resource List Request contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
GetRscListReq	E		1	Indicate the name of the message.
TransactionId	A	String	0..1	See the description in 5.2.8.
ResourceListCategory	A	Positive Integer	0..1	The type of the CMR Resource list. If not present, it indicates asking the IDs of all types of CMR Resource Lists,including undefined ResourceListCategory.

Table 34: Get CMR Resource List Request

5.4.2.1.2   Get CMR Resource List Response

The Get CMR Resource List Response contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
GetRscListResp	E		1	Indicate the name of the message.
GenResponse	E1	Structure	1	The general response information. See the structure defined in 5.2.10.
ResourceList	E1	List of Structures	0..N	See the description in table 36.

Table 35: Get CMR Resource List Response

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceListId	A	String	1	The identifier of CMR Resource List.
ListName	A	String	1	The name of CMR Resource List.
ListCategory	A	Positive Integer	0..1	The category of this CMR Resource.

Table 36: ResourceList Structure

5.4.2.2   Get CMR Resource Request and Response

The CMR Subscriber is able to query the detail information of the CMR Resources in a particular CMR Resource list. The CMR Subscriber is able to choose the CMR Resource from the CMR Resource List and send purchase request by indicating a particular CMR ResourceId.

5.4.2.2.1 Get CMR Resource Request

The Get CMR Resource Request contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
GetRscInfoReq	E		1	Indicate the name of the message.
TransactionId	A	String	0..1	See the description in 5.2.8.
ResourceListId	A	String	1	The identifier of the CMR Resource List.

Table 37: Get CMR Resource Request

5.4.2.2.2 Get CMR Resource Response

The Get CMR Resource Response contains the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
GetRscInfoResp	E		1	Indicate the name of the message.
GenResponse	E1	Structure	1	The general response information See the structure defined in 5.2.10.
ResourceInList	E1	List of Structures	0..N	See the description in 5.2.23.

Table 38: Get CMR Resource List Response

5.4.3 CMR Subscriber's Personal Resource Library Management

5.4.3.1 Query Personal Resource Library Request and Response

5.4.3.1.1 Query Personal Resource Library Request

The Query Personal Resource Library Request contains the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryPersonalRscLibReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.

Table 39: Query Personal Resource Library Request

5.4.3.1.2 Query Personal Resource Response

The Query Personal Resource Response contains the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description

QueryPersonalRscLibResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	See the structure defined in 5.2.10. General response information
PersonalResourceLibraryInfo	E1	List of Structures	0..N	The list of CMR Resources in the CMR Subscriber's Personal Resource Library See the structure defined in 5.2.16.

Table 40: Query Personal Resource Library Response

5.4.3.2 Subscribe CMR Resource Request and Response

5.4.3.2.1 Subscribe CMR Resource Request

The CMR Server SHALL add the associated CMR Resource identifier and related information into the CMR Subscriber's Personal Resource Library based on the received Subscribe CMR Resource Request.

The Subscribe CMR Resource Request contains the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
SubscribeResourceReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceShare	E1	List of Structures	1..N	The identifier of CMR Resource and associated share attbibute See the structure defined in 5.2.25.

Table 41: Subscribe CMR Resource Request

5.4.3.2.2 Subscriber CMR Resource Response

The Subscribe CMR Resource Response uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
SubscribeResourceResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	See the structure defined in 5.2.10. General response information
PersonalResourceLibraryInfo	E1	List of Structures	0..N	The information of the subscribed CMR Resources. See 5.2.16.

Table 42: Subscribe CMR Resource Response

5.4.3.3 Give CMR Resource as Present Request and Response

The CMR Subscriber (giver) is able to give the CMR Resources to other CMR Subscribers (receiver) as present. The CMR Resources are added to the Personal Resource Library of the receivers and the giver will pay for the given CMR Resources.

5.4.3.3.1 Give CMR Resource as Present Request

The Give CMR Resource as Present Request message contains the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
GiftResourceReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
Receiver	E1	List of Strings	1..N	The identifier(s) of the CMR Subscriber who receives the CMR Resources from the ResourceSender.
GiverType	A	Enumeration	0..1	This attribute is used to indicate the Giver is SP or a CMR Subscriber. - CMR Subscriber (default) - Service Provider
Giver	A	String	1	The identifier of the CMR Subscriber/SP who wants to give the CMR Resource as present to others.
ResourceIdList	E1	List of Strings	1..N	The identifiers of the CMR Resources

Table 43: Give CMR Resource as Present Request

5.4.3.3.2 Give CMR Resource as Present Response

The give CMR Resource as present response (GiftResourceResp) uses parameters as defined in the GenResponse structure.

5.4.3.4 Update Personal Resource Library Request

5.4.3.4.1 Update Personal Resource Library Request

 The CMR Server SHALL update the related CMR Resource Share attribute in the CMR Subscriber's Personal Resource Library based on the Update Personal Resource Request.

The Update Personal Resource Library Request contains the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UpdatePersonalSrc LibReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.

| ResourceIdShare | E1 | List of Structures | 1..N | The identifier of CMR Resource and associated share attbibute |
| | | | | See the structure defined in 5.2.25. |

Table 44: Update Personal Resource Library Request

5.4.3.4.2 Update Personal Resource Library Response

The Update Personal Resource Response (UpdatePersonalRscLibResp) uses the parameters as defined in the GenResponse structure.

5.4.3.5 Delete Personal Resource Library Request

5.4.3.5.1 Delete Personal Resource Library Request

The Delete Personal Resource Library Request contains the parameters defined in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeletePersonalRsc LibReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceIdList	E1	List of Strings	1..N	The identifiers of the CMR Resources.

Table 45: Delete Personal Resource Library Request

5.4.3.5.2 Delete Personal Resource Library Response

The Delete Personal Resource Response message (DeletePersonalRscLibResp) uses the parameters as defined in the GenResonse structure.

5.4.3.6 CMR Resource Expiration Notification Message

The CMR Server SHOULD support some mechanisms (e.g. periodically check based on system date/time and settings) to get the information about whether there are CMR Resources will expire within certain frame or have expired in CMR Subscribers' Personal Library and determining whether to send the expiration notification message to these CMR Subscribers.

When the CMR Resources subscribed by the CMR Subscriber will expire or have expired and the expiration notification messages need to be sent to the CMR Subscriber, the CMR Server SHOULD send the expiration notification message to the CMR Management Client directly when the CMR Management Client has connected with the CMR Server. The CMR Server SHOULD support other methods to send the expiration notification (e.g. SMS, MMS) based on the Service Provider's Policy.

The CMR Resource Expiration Notification message is sent by the CMR Server and uses parameters shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ExpireNotify	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.

SubscriberId	A	String	1	The identifier of the CMR Subscriber who subscribes the CMR Resource.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceExpireInfo	E1	List of Structures	1..N	See Table 47. CMR Resource Expiration Information Structure.

Table 46: CMR Resource Expiration Notification Message

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ResourceId	A	String	1	The identifier of CMR Resource.
ResourceName	A	String	0..1	The name of CMR Resource.
ExpireDate	A	dateTime	1	Expire time of CMR Resource.

Table 47: CMR Resource Expiration Information Structure

5.4.3.7   Copy CMR Resource

The CMR Subscriber could copy the CMR Resources from other CMR Subscriber's Personal Resource Library, including copy by ResourceId and copy the CMR Resources which he/she has experienced in the already finished communications.

When the copy request indicates the CMR Subscriber wants to copy the CMR Resource experienced in the finished communications, the CMR Server SHOULD find out the CMR Resources presented in the finished communications according to the information received in the request message:

- The identifier of the CMR Subscriber who wants to copy

- (optional) the information of call party involved in the communication with the CMR Subscriber

- the start and/or the end time of the communications

    - if there is no start time and end time in the request message, it indicates the last finished communication

    - if both the start time and the end time are present in the request message, it indicates the communications happened between the start time and end time

    - if only the start time is present in the request message, it indicates the finished communications happened after the start time

    - if only the end time is present in the request message, it indicates the finished communications happened before the end time

For the requested CMR Resources to be copied the CMR Server SHOULD check whether the owner of the CMR Resources allows the CMR Resources to be copied and whether the CMR Resources are available. If the owner of the CMR Resources doesn't allow the CMR Resources to be copied or the CMR Resources to be copied are not available, the CMR Server SHALL not copy the CMR Resources.

Depends on the SPs' policy, the copy request MAY need confirmation before it is is executed. For example, for copy the CMR Resources experienced in the already finished communications, the CMR subscriber may want to know the information about the CMR Resources (e.g. the price) before making the decision.

If the copy request doesn't need confirmation, the requested CMR Resources will be added into the requesting CMR Subscriber's Personal Resource Library. The CMR Server SHALL send the Copy CMR Resource Response to the CMR Management Client with the parameters GenResponse, ResourceInfo and ConfirmFlag is set to false.

If the copy request need confirmation, the CMR Server SHALL send a Copy CMR Resource Response to the CMR Management Client with the parameters GenResponse, ResourceInfo and ConfirmFlag set to true. The CMR Server SHALL wait for the CMR Subscriber to confirm the copy. In this case, the CMR Server SHALL execute the copy action after receiving the Copy Confirm Request message, the requested CMR Resources will be added into the requesting CMR Subscriber's Personal Resource Library. The CMR Server SHALL send a Copy Confirm Response with the copy result to the CMR Management Client.

5.4.3.7.1 Copy CMR Resource Request

The Copy CMR Resource Request message contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
CopyResourceReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
Action	A	Enumeration	1	1=copy by ResourceId 2=copy the CMR Resource experienced in the already finished communications
SubscriberId	A	String	1	The identity of the CMR subscriber who wants to copy the CMR Resource from other CMR Subscriber.
ResourceIdList	E1	List of Strings	0..N	The identifier of the CMR Resource Conditional: Mandatory only when Action=1
ResourceOwner	A	String	0..1	The SubscriberId of the CMR Resource owner. Conditional: Mandatory only when Action=1
CallParty	A	String	0..1	The identification of the party involed in the communication with CMRSubscriber
StartTime	A	dateTime	0..1	The start date time. If this parameter is give, it means the CMR Subscriber wants to copy the CMR Resource related with the communications happened after the start date time.
EndTime	A	dateTime	0..1	The end date time. If this parameter is give, it means the CMR Subscriber wants to copy the CMR Resource related with the communications happened before the end date time.

Table 48: Copy CMR Resource Request

5.4.3.7.2 Copy CMR Resource Response

The Copy CMR Resource Response uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description

CopyResourceResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information.See the structure defined in 5.2.10.
ConfirmFlag	A	Boolean	1	Indicate whether confirmation to the copy is needed TRUE - need confirmation FALSE- No confirmation needed
ResourceInfo	E	List of Structures	0..N	The information of the CMR Resources to be copied or already copied. See the structure defined in 5.2.16.

<div align="center">

Table 49: Copy CMR Resource Response

</div>

5.4.3.7.3   Copy Confirm Request

The Copy Confirm Request uses parameters as shown in the following table:

Parameter Name	Attribute/El ement	Data Type	Parameter Cardinality	Description
CopyConfirmReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The identity of the CMR subscriber who wants to copy the CMR Resource from other CMR Subscriber.
ResourceIdList	E1	List of Strings	1..N	The identifier of the CMR Resource

<div align="center">

Table 50: Copy Confirm Request

</div>

5.4.3.7.4   Copy Confirm Response

The Copy Confirm Response (CopyConfirmResp) uses parameters as defined in the GenResponse structure.

5.4.4   CMR Resource Metadata Management

CMR Subscribers are able to manage the metadata of their individual CMR Resources. The definitions of the CMR Resource metadata management messages are as defined in 5.6.1.

5.4.5   CMR Resource Box Management

CMR Subscribers are able to define their own CMR Resource Boxes and set the presentation mode (playing sequence) of CMR Resources in the CMR Resource Box.

The definitions of the CMR Resource Box management messages are as defined in 5.6.2.

5.4.6   CMR Resource Presentation Rule

The CMR Subscriber is able to manage his/her CMR Resource presentation rule including (but not limited to) default CMR Resources, filtering setting, priority of CMRBT/CMRT service, CMR Resources to be presented based on different criteria.

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5.4.6.1   Query Presentation Rule Request and Response

5.4.6.1.1   Query Presentation Rule Request and Response

The Query Presentation Rule Request message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryRuleReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

Table 51: Query Presentation Rule Request

5.4.6.1.2   Query Presentation Rule Response

The Query Presentation Rule Response message uses parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryRuleResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information.See the structure defined in 5.2.10.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
DefaultCMRResourceIdList1	E1	List of Strings	0..N	CMR Resource(s) to be presented simultaneously when the presenting CMR Resource is stopped. Different media types of CMR Resources are allowed if not conflicted.
DefaultCMRResourceIdList2	E1	List of Strings	0..N	CMR Resource(s) to be presented simultaneously for the condition not fall in any specified criteria in the PreferenceRule, e.g. groups, time period. Different media types of CMR Resources are allowed if not conflicted.

ContinuePlay	A	Boolean	0..1	Continue setting information. TRUE - Stop CMR presentation when the call is answered. FALSE- Continue CMR presentation when the call is answered. Default is FALSE.
Priority	A	Enumeration	0..1	The priority of the calling and called CMR Subscribers - Calling party has higher priority - Called party has higher priority For CMRBT, calling party has higher priority by default For CMRT, called party has higher priority by default. For CMRBT, this priority setting is applied in the case of the CMR Subscriber is the calling party. For CMRT, this priority setting is applied in the case of the CMR Subscirber is the called party.
FilterSetting	E1	Structure	0..1	Indicate if the CMR Subscriber wants to filter CMR service. See the structure defined in 5.2.9. For CMRBT, this filter setting is applied in the case of the CMR Subscriber is the calling party. For CMRT, this filter setting is applied in the case of the CMR Subscirber is the called party.
SettingPriority	E1	List of Structures	0..N	The presentation type priority. See the structure defined in 5.2.27.
PreferenceRuleWithId	E1	List of Structures	0..N	See the structure defined in 5.2.18.

Table 52: Query Presentation Rule Response

5.4.6.2 Add Presentation Rule Request and Response

5.4.6.2.1 Add Presentation Rule Request

When receiving add presentation rule request, the CMR Server SHALL generate PreferenceRuleId to uniquely identify the preference rule and send the preference rule with the assigned PreferenceRuleId in the response message..

The value "00000000" is reserved for deleting all preference rules and SHOULD not be used by the CMR Server when generating PreferenceRuleId.

Add Presentation Rule Request contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
AddRuleReq	E		1	Indicate the name of the message.
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
DefaultCMRResourceIdList1	E1	List of Strings	0..N	Default CMR Resource(s) to be presented simultaneously when the presenting CMR Resource is stopped. Different media types of CMR Resources are allowed if not conflicted.
DefaultCMRResourceIdList2	E1	List of Strings	0..N	Default CMR Resource(s) simultaneously to be presented for the condition not fall in any specified criteria of PreferenceRule, e.g. groups, time period. Different media types of CMR Resources are allowed if not conflicted.
ContinuePlay	A	Boolean	0..1	TRUE - Stop CMR presentation when the call is answered. FALSE- Continue CMR presentation when the call is answered. Default is FALSE.
Priority	A	Enumeration	0..1	The priority of the calling and called CMR Subscribers - Calling party has higher priority - Called party has higher priority For CMRBT, calling party has higher priority by default For CMRT, called party has higher priority by default. For CMRBT, this priority setting is applied in the case of the CMR Subscriber is the calling party. For CMRT, this priority setting is applied in the case of the CMR Subscirber is the called party.

FilterSetting	E1	Structure	0..1	Indicate if the CMR Subscriber wants to filter CMR service. See the structure defined in 5.2.9. For CMRBT, this filter setting is applied in the case of the CMR Subscriber is the calling party. For CMRT, this filter setting is applied in the case of the CMR Subscirber is the called party.
SettingPriority	E1	List of Structures	0..N	The priority settings of difference presentation type. See the structure defined in 5.2.27.
PreferenceRule	E1	List of Structures	0..N	The new preference rule. See the structure defined in 5.2.17.

Table 53: Add Presentation Rule Request

5.4.6.2.2   Add Presentation Rule Response

The Add Presentation Rule Response message uses parameters as shown in the following table:

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
AddRuleResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information See the structure defined in 5.2.10.
PreferenceRuleWithId	E1	List of Structures	0..N	Conditional. It contains the succefully handled preference rules with PreferenceRuleId assigned See the structure defined in 5.2.18.

Table 54: Add Presentation Rule Response

5.4.6.3   Update Presentation Rule Request and Response

5.4.6.3.1   Update Presentation Rule Request

Update Presentation Rule Request contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UpdateRuleReq	E		1	Indicate the name of the message.
TransactionId	A	String	0..1	See the description in 5.2.8.

SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
DefaultCMRResourceIdList1	E1	List of Strings	0..N	Default CMR Resource(s) to be presented simultaneously when the presenting CMR Resource is stopped. Different media types of CMR Resources are allowed.
DefaultCMRResourceIdList2	E1	List of Strings	0..N	Default CMR Resource(s) to be presented simultaneously for the condition not fall in any specified criteria in the PreferenceRule, e.g. groups, time period. Different media types of CMR Resources are allowed.
ContinuePlay	A	Boolean	0..1	TRUE - Stop CMR presentation when the call is answered. FALSE- Continue CMR presentation when the call is answered. Default is FALSE.
Priority	A	Enumeration	0..1	The priority of the calling and called CMR Subscribers - Calling party has higher priority - Called party has higher priority For CMRBT, calling party has higher priority by default For CMRT, called party has higher priority by default. For CMRT, this priority setting is applied in the case of the CMR Subscirber is the called party.

FilterSetting	E1	Structure	0..1	Indicate if the CMR Subscriber wants to filter CMR service. See the structure defined in 5.2.9. For CMRBT, this filter setting is applied in the case of the CMR Subscriber is the calling party. For CMRT, this filter setting is applied in the case of the CMR Subscirber is the called party.
SettingPriority	E1	List of Structures	0..N	The priority settings of different presentation type. See the structure defined in 5.2.27.
PreferenceRuleWithId	E1	List of Structures	0..N	See the structure defined in 5.2.18. The PreferenceRuleId in the this structure are used to identify the target PreferenceRule to be updated.

Table 55: Update Presentation Rule Request

5.4.6.3.2 Update Presentation Rule Response

The Update Presentation Rule Response (UpdateRuleResp) message uses parameters as defined in the GenResponse structure.

5.4.6.4 Delete Presentation Rule Request and Response

5.4.6.4.1 Delete Presentation Rule Request

Delete Presentation Rule Request contains the parameters as shown in the following table.

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeleteRuleReq	E		1	Indicate the name of the message.
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The unique identifier of the CMR subscriber.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

PresentationTypePriority	A	Byte	0..N	Indicate the priority settins of which presentation type to be deleted: Bit0: GroupUser Bit1: DateTime Bit2: Prensence Bit3: Location If PresentationType="00000000", it means to delete priority settings of all presentation types.
PreferenceRuleId	A	List of Strings	0..N	The identification of the preference rule. If PreferenceRuleId ="00000000", it means to delete all preference rules
DefaultCMRResourceIdList1	E1	List of Strings	0..N	Default CMR Resource(s) to be presented simultaneously when the presenting CMR Resource is stopped. Different media types of CMR Resources are allowed.
DefaultCMRResourceIdList2	E1	List of Strings	0..N	Default CMR Resource(s) to be presented simultaneously for the condition not fall in any specified criteria in the PreferenceRule, e.g. groups, time period. Different media types of CMR Resources are allowed.

Table 56: Delete Presentation Rule Request

5.4.6.4.2 Delete Presentation Rule Response

The Delete Presentation Rule Response message (DeleteRuleResp) uses parameters as defined in the GenResponse structure.

5.5 CMR-4 Interface

The CMR-4 Interface is exposed by the CMR Server and used by the CMR Enabled Applications which is not call session related for:

- Request the CMR service

- Receive the response of the request (i.e. the address of the CMR Resource)

Unless otherwise specified, the request messages are sent from the CMR Enabled Application to the CMR Server and the response messages are sent from the CMR Server to the CMR Enabled Application.

5.5.1 CMR Service Request and Response

When receiving the CMR Service Request, the CMR Server SHALL select the CMR Resources as the procedure defined in section 6.1.

5.5.1.1 CMR Service Request

The CMR Service Request uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
CMRServiceReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
CallingId	A	String	1	The unique identifier of the calling party.
CalledId	A	String	1	The unique identifier of the called party.
ServiceId	A	String	0..1	See the description in 5.2.4. The service identity of the requesting CMR Enabled Applicaiton
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

Table 57: CMR service request

5.5.1.2 CMR Service Response

The CMR Service Response uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
CMRServiceResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information. See the structure defined in 5.2.10.
CMRResourceInfo	E1	List of Structures	0..N	See Table 58. CMR Resouce URI address can be used by application. If multiple addresses are present, these medias may be delivered sequentially.

Table 58: CMR service response

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ServiceType	E	Structure	0..1	See the structure defined in 5.2.26. Indicate the service type with which the CMR Resouce URI is associated
CMRResourceURI	E	List of Strings	0..N	CMR Resouce URI address can be used by application. If multiple addresses are present, these medias may be delivered

				sequentially.

Table 59: CMRResourceInfo Structure

5.6 CMR-5 Interface

5.6.1 CMR Resource Metadata Management

The CMR-5 Interface is exposed by the CMR Server for CMR Resource metadata management functions:

- Query CMR Resource Metadata

- Create CMR Resource Metadata

- Update CMR Resource Metadata

- Delete CMR Resource Metadata

Unless otherwise specified, the request messages are sent from the CMR Portal to the CMR Server and the response messages are sent from the CMR Server to the CMR Portal.

5.6.1.1 Query CMR Resource Metadata Request and Response

5.6.1.1.1 Query CMR Resource Metadata Request

The Query CMR Resource Metadata Request message uses the parameters defined in the following table:

Parameter Name	Attribute/Element	Data Type	Parameter cardinality	Description
QueryRscMetadataReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ProviderId	A	String	1	The identifier of entity who provide the content It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner type of the CMR Resource. See the description in 5.2.3.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceIdList	E1	List of Strings	0..N	Identities of CMR Resources It means all the CMR Resources if this parameter is not present

Table 60: Query CMR Resource Metadata Request

5.6.1.1.2 Query CMR Resource Metadata Response

The Query CMR Resource Metadata Response message uses the parameters defined in the following table:

Parameter Name	Attribute/Element	Data Type	Parameter cardinality	Description
QueryRscMetadataResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	The general response information. See the structure defined in 5.2.10.
ResourceMetadata	E1	List of Structures	0..N	See the structure defined in 5.2.24.

Table 61: Query CMR Resource Metadata Response

5.6.1.2 Create CMR Resource Metadata Request and Response

5.6.1.2.1 Create CMR Resource Metadata Request

The Create CMR Resource Metadata Request message uses the parameters defined in the following table:

Parameter Name	Attribute/Element	Data Type	Parameter cardinality	Description
CreateRscMetadataReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ProviderId	A	String	1	The identifier of entity who provide the content It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner type of the CMR Resource. See the description in 5.2.3.
ResourceMetadata	E1	Structure	1	CMR Resource informaiton. See the structure defined in 5.2.24

Table 62: Create CMR Resource Metadata Request

5.6.1.2.2 Create CMR Resource Metadata Response

The Create CMR Resource Metadata Response message (CreateRscMetadataResp) uses the parameters as defined in the GenResponse structure.

5.6.1.3 Update CMR Resource Metadata Request and Response

5.6.1.3.1 Update CMR Resource Metadata Request and Response

The Update CMR Resource metadata Request message uses the parameters defined in the following table:

Parameter Name	Attribute/Element	Data Type	Parameter cardinality	Description
UpdateRscMetadataReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.

ProviderId	A	String	1	The identifier of entity who provide the content. It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner type of the CMR Resource. See the description in 5.2.3.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceId	A	String	1	Identifier of CMR Resource
MediaType	A	String	0..1	See the description in 5.2.2.
Format	E1	List of Strings	1..N	The codecs (e.g. H.263 Profile Level 10) of the CMR Resource media.
Name	A	String	0..1	The human readable name of the CMR Resource
Price	A	String	0..1	Readable price of the CMR Resource
CopyrightOwner	A	String	0..1	The Owner of the copyright of the CMR Resource
ExpireDate	A	dateTime	0..1	Expire Time of CMR Resource It means the CMR Resource is always active if this parameter is not present
Status	A	Enumeration	0..1	Status of CMR Resource. See the description in 5.2.5.
Author	A	String	0..1	The author of the CMR Resource, such as the singer name of a song, a director of a clip.
Language	A	String	0..1	The language of the CMR Resource.

Table 63: Update CMR Resource Metadata Request

5.6.1.3.2 Update CMR Resource Metadata Response

The Update CMR Resource metadata Response message (UpdateRscMetadataResp) uses the parameters as defined in the GenResponse structure.

5.6.1.4 Delete CMR Resource Metadata Request and Response

5.6.1.4.1 Delete CMR Resource Metadata Request

The Delete CMR Resource metadata Request message uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeleteRscMetadataReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.

ProviderId	A	String	1	The identifier of the content provier
OwnerType	A	Enumeration	1	The owner type of the CMR Resource. See the description in 5.2.3.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceIdList	E1	List of Strings	1..N	Identifiers of CMR Resources

Table 64: Delete CMR Resource metadat Request

5.6.1.4.2 Delete CMR Resource Metadata Response

The Delete CMR Resource metadata Response message (DeleteRscMetadataResp) uses the parameters as defined in the GenResponse structure.

5.6.2 CMR ResourceBox Management

CMR Subscribers and CP are allowed to define their own CMR Resource Boxes and set the presentation rule (playing sequence) of CMR Resources in the CMR Resource Box. When being used in CMR service, the CMR Resources in the CMR Resource Box are selected for presentation according to presentation rules.

5.6.2.1 Query Resource Box Request and Response

5.6.2.1.1 Query Resource Box Request

The Query Resource Box Request uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QueryRscBoxReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ProviderId	A	String	1	The identifier of entity who provide the content It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner type of the CMR Resource Box. See the description in 5.2.3.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceBoxIdList	E1	List of Strings	0..N	The identifiers of the CMR Resource Boxes. It means all the CMR Resource Boxes if this parameter is not present

Table 65: Query CMR Resource Box Request

5.6.2.1.2 Query Resource Box Response

The Query Resource Box Response uses the parameters defined in the following table:

Parameter name	Attribute/	Data type	Parameter	Description

	Element		**cardinality**	
QueryRscBoxResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	See the structure defined in 5.2.10. General response information
ResourceBoxInfo	E1	List of Structures	0..N	The information of the CMR Resource Box. See the structure defined in 5.2.21.

<div align="center">Table 66: Query Resource Box Response</div>

5.6.2.2   Create Resource Box Request and Response

5.6.2.2.1   Create Resource Box Request and Response

The Create Resource Box Request message uses the parameters defined in the following table:

Parameter Name	**Attribute/ Element**	**Data Type**	**Parameter cardinality**	**Description**
CreateRscBoxReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ProviderId	A	String	1	The identifier of entity who provide the content It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner of the CMR Resource Box. See the description in 5.2.3.
ResourceBoxInfo	E1	Structure	1	The information of the CMR Resource Box. See the structure defined in 5.2.21.

<div align="center">Table 67: Create Resource Box Request</div>

5.6.2.2.2   Create Resource Box Response

The Create Resource Box Response message (CreateRscBoxResp) uses the parameters as defined in the GenResponse structure.

5.6.2.3   Update Resource Box Request and Response

5.6.2.3.1   Update Resource Box Request and Response

The Update Resource Box Request message uses the parameters defined in the following table:

Parameter Name	**Attribute/ Element**	**Data Type**	**Parameter cardinality**	**Description**
UpdateRscBoxReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.

ProviderId	A	String	1	The identifier of entity who provide the content
				It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner type of the CMR Resource Box. See the description in 5.2.3.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceBoxId	A	String	1	The identifier of the CMR Resource Box
PresentationMode	A	Enumeration	0..1	Playing mode of CMR Resources in the CMR Resource Box:
				- random playing (default)
				- circular playing
Mediatype	A	String	0..1	The media type of the CMR Resource Box
				See the description in 5.2.2.
Format	E	List of Strings	0..N	The codecs (e.g. H.263 Profile Level 10) of the CMR Resource media.
Name	A	String	0..1	The human readable name of the CMR Resource Box
Price	A	String	0..1	Readable price of the CMR Resource Box
CopyrightOwner	A	String	0..1	The Owner of the copyright of the CMR Resource Box.
ExpireDate	A	dateTime	0..1	Expire Time of CMR Resource Box
				It means the CMR Resource Box is always active if this parameter is not present
Status	A	Enumeration	0..1	Status of CMR Resource Box. See the description in 5.2.5.
Author	A	String	0..1	The author of the CMR Resource Box.
Language	A	String	0..1	The language of the CMR Resource Box.
ResourceInBox	E1	List of Structures	0..N	The list of CMR Resources in the CMR Resource Box
				See the structure defined in 5.2.22.

Table 68: Update Resource Box Request

5.6.2.3.2 Update Resource Box Response

The Update Resource Box Response message (UpdateRscBoxResp) uses the parameters as defined in the GenResponse structure.

5.6.2.4   Delete Resource Box Request and Response

5.6.2.4.1   Delete Resource Box Request

The Delete Resource Box Request message uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeleteRscBoxReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ProviderId	A	String	1	The identifier of entity who provide the content It contains the Content Provider identity when OwnerType is CP or SubscriberId when OwnerType is CMR Subscriber
OwnerType	A	Enumeration	1	The owner type of the CMR Resource Box. See the description in 5.2.3.
ServiceId	A	String	0..1	See the description in 5.2.4.
ResourceBoxIdList	E1	List of Strings	1..N	The identifiers of the CMR Resource Boxes.

Table 69: Delete Resource Box Request

5.6.2.4.2   Delete Resource Box Response

The Delete Resource Box Response message (DeleteRscBoxResp) uses the parameters as defined in the GenResponse structure.

5.7   CMR-6 Interface

The CMR-6 Interface is exposed by the CMR Server to the CMR Portal to perform the CMR service management functions which include CMR Subscriber's preference management, CMR Subscriber's Personal Resource Library management, system setting management etc.

Unless otherwise specified, the request messages are sent from the CMR Portal to the CMR Server and the response messages are sent from the CMR Server to the CMR Portal.

5.7.1   Group and Member Management

The CMR Subscriber is able to manage his/her groups and members through the CMR Portal. The definitions of the group and member management messages are defined in 5.4.1.

5.7.2   CMR Resource Search

The CMR Subscriber is able to get the information of available CMR Resource list in the CMR Server and the detail information about the CMR Resources in the list. The definitions of the CMR Resource search messages are as defined in 5.4.2.

5.7.3 CMR Subscriber' Personal Resource Library Management

The CMR Subscriber is able to manage his/her Personal Resource Library through the CMR Portal. The definitions of the CMR Subscriber's Personal Resource Library management messages are defined in 5.4.3.

5.7.4 CMR Resource Presentation Rule

The definition of the CMR Resource Presentation Rule management messages are defined in 5.4.6.

5.7.5 Service Subscription Management Function

The CMR Subscriber is able to subscribe and unsubscribe CMR service, as well as suspend/resume/renew and query CMR service subscription.

5.7.5.1 Query Service Subscription Request and Response

5.7.5.1.1 Query Service Subscription Request

The Query Service Subscription Request message uses the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QuerySvcSubscripReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The identity of CMR Subscriber.
ServiceProviderId	A	String	0..1	The identifier of the Service Provider who sends the request message.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

Table 70: Query Service Subscription Request

5.7.5.1.2 Query Service Subscription Response

The Query Service Subscription Response message uses the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QuerySvcSubscripResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	General information of the response message. See the structure defined in 5.2.10.
SubscriptionInfo	E1	List of Structures	0..N	The servcice subscription info of the subscriber. See Table 71.

Table 71: Query Service Subscription Response

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E	Structure	0..1	See the structure defined in 5.2.26.
ActivateTime	A	dateTime	1	Activation time of CMR service
ExpireTime	A	dateTime	0..1	Expiration time of CMR service

It menas the service has no expiration time (will not expire) if this parameter is not present |
ServiceStatus	A	Enumeration	0..1	The sevice subscription status. See the description in 5.2.5.
SubscriberType	A	Enumeration	1	The types of the CMR Subscribers. See the description in 5.2.7.
SubscriberLevel	A	Positive Integer	1	The lervel of the CMR Subscriber used by SP to differentiate the CMR Subscriber
SubsciberPhoneId	E1	List of Structures	1..N	The identifier or phone number of the CMR Subscriber when used in the communicaiton. It can be E.164 Number or SIP/Tel URI. See the structure defined in 5.2.13.
BillType	A	Enumeration	0..1	The type of charging for the CMR Subscriber. See the description in 5.2.1.
SuspendStartTime	A	dateTime	0..1	The suspend start time.
SuspendEndTime	A	dateTime	0..1	The suspend end time.

If not present, it means the service will be suspended untill it is resumed |
| ResumeTime | A | dateTime | 0..1 | The resume time of CMR service |

Table 72: SubscriptionInfo Structure

5.7.5.2   Subscribe Service Request and Response

5.7.5.2.1   Subscribe Service Request

The Subscribe Service Request message contains the parameters the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
SubSvcReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ServiceProviderId	A	String	0..1	The identifier of the Service Provider who sends the request message.

SubscriberId	A	String	1	The identity of CMR Subscriber for managmenet activity.
Paswd	A	String	1	The password for CMR Subscriber for management activity
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
SubscriberType	A	Enumeration	1	The type of the CMR Subscriber. See the description in 5.2.7.
SubscriberLevel	A	Positive Integer	1	The lervel of the CMR Subscriber used by SP to differentiate the CMR Subscriber.
SubsciberPhoneId	E1	List of Structures	1..N	The identifier or phone number of the CMR Subscriber used in the communicaiton. It can be E.164 Number or SIP/Tel URI. See the structure defined in 5.2.13.
ActivateTime	A	dateTime	0..1	Activation time of CMR service It means immediately activate the service if this paramter is not present.
ExpireTime	A	dateTime	0..1	Expiration time of CMR service It menas the service has no expiration time (will not expire) if this parameter is not present
BillType	A	Enumeration	0..1	The type of charging for the CMR Subscriber. See the description in 5.2.1.

Table 73: Subscribe Service Request

5.7.5.2.2   Subscribe Service Response

The Subscribe Service Response message contains the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
SubSvcResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	General information of the response message. See the structure defined in 5.2.10.
ActivateTime	A	dateTime	1	Effective activation time of CMR service

| ExpireTime | A | dateTime | 0..1 | Effective expiration time of CMR service |
| | | | | It menas the service has no expiration time (will not expire) if this parameter is not present |

<div align="center">

Table 74: Subscribe Service Response

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5.7.5.3 Unsubscribe/Resume Service Request and Response

5.7.5.3.1 Unsubscribe/Resume Service Request

The Unsubscribe/Resume Service Request messages contain the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UnsubSvcReq/Resum eSvcReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The identity of CMR Subscriber.
ServiceProviderId	A	String	0..1	The identifier of the Service Provider who sends the request message.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
Time	A	dateTime	0..1	Deactivation/resume time of CMR service. It means immediately deactivate/resume the service if this paramter is not present.

<div align="center">

Table 75: Unsubscribe/Resume Service Request

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5.7.5.3.2 Unsubscribe/Resume Service Response

The Unsubscribe/Resume Service Response messages contain the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UnsubSvcResp/ ResumeSvcResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	General information of the response message.See the structure defined in 5.2.10.
Time	A	dateTime	1	The effective deactivation/resume time of the service

<div align="center">

Table 76: Unsubscribe /Resume Service Response

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5.7.5.4 Suspend/Renew Service Request and Response

5.7.5.4.1 Suspend/Renew Service Request

The Suspend/Renew Service Requests use the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
SuspendSvcReq/Rene wSvcReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The identity of CMR Subscriber.
ServiceProviderId	A	String	0..1	The identifier of the Service Provider who sends the request message.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
StartTime	A	dateTime	0..1	The start time of the service to be suspended/renewed(re-activated). It means immediately supend/renewed(re-activated) the service if this paramter is not present.
Duration	A	dateTime	0..1	The duration of the service to be suspened/activated. If not present, for suspend request,it means the service will be suspended untill it is resumed;for renew request, it means the service will not expire(always acitve).

Table 77: Suspend/Renew Service Request

5.7.5.4.2 Suspend/Renew Service Response

The Suspend Service Response and Renew Service Response use the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
SuspendSvcResp/Rene wSvcResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	General information of the response message. See the structure defined in 5.2.10.
StartTime	A	dateTime	1	The effective suspend/reactivate start time.

EndTime	A	dateTime	0..1	The effective suspend/re-activate end /time. If not present, for suspend request,it means the service will be suspended untill it is resumed;for renew request, it means the service will not expire(always acitve).

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Table 78: Suspend/Renew Service Response

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5.7.5.5 Update Service Request and Response

5.7.5.5.1 Update Service Request

The Update Service Request contains the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
UpdateSvcReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
SubscriberId	A	String	1	The identity of CMR Subscriber.
ServiceProviderId	A	String	0..1	The identifier of the Service Provider who sends the request message.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.
BillType	A	Enumeration	0..1	The type of charging for the CMR Subscriber.See the description in 5.2.1.
SubsciberPhoneId	E1	List of Structures	0..N	The identifier or phone number of the CMR Subscriber used in the communicaiton. It can be E.164 Number or SIP/Tel URI. See the structure defined in 5.2.13.
OldPaswd	A	String	0..1	The encrypted original password for CMR Subscriber for management activity.
NewPasswd	A	String	0..1	The encrypted new password for CMR Subscriber for management activity.

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Table 79: Update Service Request

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5.7.5.5.2 Update Service Response

The Update Service Response (UpdateSvcResp) contains the parameters as defined in the GenResponse structure.

5.7.6 System Settings Management Function

Service Provider could configure the CMR service system settings.

5.7.6.1 Query System Settings Request and Response

5.7.6.1.1 Query System Settings Request

The Query System Settings Request uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QuerySystemSetReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ServiceProviderId	A	String	1	The identifier of the Service Provider who sends the request message.
ServiceId	A	String	0..1	See the description in 5.2.4. If this parameter exists, it means to query the sytem settings associated with the ServiceId.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

Table 80: Query System Settings Request

5.7.6.1.2 Query System Settings Response

The Query System Settings Response uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
QuerySystemSetResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	See the structure defined in 5.2.10. General response information
SystemSettings	E1	Structure	0..1	See the structure defined in 5.2.28. The syetem setting information

Table 81: Query System Settings Response

5.7.6.2 Create/Update System Settings Request and Response

5.7.6.2.1 Create/Update System Settings Request

The Create System Settings Request and System Update Settings Request use the parameters as shown in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
CreateSystemSetReq/ UpdateSystemSetReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ServiceProviderId	A	String	1	The identifier of the Service Provider who sends the request message.

| SystemSettings | E1 | Structure | 1 | See the structure defined in 5.2.28. The syetem setting information |

Table 82: Create/UpdateSystem Settings Request

5.7.6.2.2   Create/Update System Settings Response

The Create System Settings Response (CreateSystemSetResp) and Update System Settings Response (UpdateSystemSetResp) use the parameters as defined in the GenResponse structure.

5.7.6.3   Delete System Settings Request and Response

5.7.6.3.1   Delete System Settings Request

The Delete System Settings Request uses the parameters defined in the following table:

Parameter Name	Attribute/ Element	Data Type	Parameter cardinality	Description
DeleteSystemSetReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ServiceProviderId	A	String	1	The identifier of the Service Provider who sends the request message.
ServiceId	A	String	0..1	See the description in 5.2.4.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26.

Table 83: Delete System Settings Request

5.7.6.3.2   Delete System Settings Response

The Delete System Settings Response (DeleteSystemSetResp) uses the parameters as defined in the GenResponse structure.

5.8   CMR-7 Interface

The CMR-7 Interface is exposed by the CMR Server to the CMR Portal for the service report delivery.

Unless otherwise specified, the request messages are sent from the CMR Portal to the CMR Server and the response messages are sent from the CMR Server to the CMR Portal.

5.8.1   CMR Resource Report

The content in the CMR Resource report is depend on the deployment and is not specified in this specification. It may include the information related to CMR Resource management activities or CMR Resource usage.

5.8.1.1   CMR Resource Report Request and Response

It is allowed to request a specific report or several reports using ContentProviderId, ServiceId or ResourceId. If none of these optional parameters is included in the request, it means to request the whole CMR Resource reports available in the CMR Server.

5.8.1.1.1   CMR Resource Report Request

The CMR Resource Report Request uses the parameters defined in the following table:

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description

CMRRscRptReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ContentProviderId	A	String	0..1	The identifier of the supplier of the CMR Resource If this parameter exists, it means to request the resource report related with a special Content Provider.
ServiceId	A	String	0..1	See the description in 5.2.4. If this parameter exists, it means to request the resource report related with a special service.
ResourceId	A	String	0..1	The identifier of the CMR Resource If this parameter exists, it means to request the resource report related with a special CMR Resource.

Table 84: CMR Resource Report Request

5.8.1.1.2   CMR Resource Report Response

The CMR Resource Report Response uses the parameters defined in the following table:

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
CMRRscRptResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	See the structure defined in 5.2.10. General response information
RepInfo	E1	List of Structures	0..N	Information about CMR Resource report See the structure defined in 5.2.20.

Table 85: CMR Resource Report Response

5.8.2   CMR Service Management Report

The content in the CMR service report is depend on the deployment and is not specified in this specification. It may include the information about service management activities taken by the CMR Subscriber/ Service Provider.

5.8.2.1   CMR Service Management Report Request and Response

It is allowed to request a specific report or several reports using ServiceProviderId, ServiceId, ServiceType and SubscriberId. If none of these optional parameters is included in the request, it means to request the whole CMR service management reports available in the CMR Server.

5.8.2.1.1   CMR Service Management Report Request

The CMR Service Management Report Request uses the parameters defined in the following table：

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description

CMRSvcMgtRptReq	E		1	Indicate the name of the message
TransactionId	A	String	0..1	See the description in 5.2.8.
ServiceProviderId	A	String	1	The identifier of the Service Provider who requests the report
ServiceId	A	String	0..1	See the description in 5.2.4. If this parameter exists, it means to request the service management report related with a special service.
ServiceType	E1	Structure	0..1	See the structure defined in 5.2.26. If this parameter exists, it means to request the service management report related with a special type service.
SubscriberId	A	String	0..1	The unique identifier of the CMR Subscriber. If this parameter exists, it means to request the service management report about this CMR Subscriber's activity.

Table 86: CMR Service Management Report Request

5.8.2.1.2   CMR Service Management Report Response

The CMR Service Management Report Response uses the parameters defined in the following table:

Parameter name	Attribute/ Element	Data type	Parameter cardinality	Description
CMRSvcMgtRptResp	E		1	Indicate the name of the message
GenResponse	E1	Structure	1	See the structure defined in 5.2.10. General response information
RepInfo	E	List of Structures	0..N	Information about CMR service management report . See the structure defined in 5.2.20.

Table 87: CMR Service Management Report Response

6. General Procedures

This section describes the general procedures apply to SIP/IP core network and/or CS core network.

6.1   CMR Resources Selection/Generation

The CMR Resources selection and generation procedure applies to both SIP/IP core network and/or CS core network.

The CMR Server SHALL select the proper CMR Resources based on the presentation rule defined by the CMR Subscriber and SP's policy.

The CMR Server SHALL execute the following procedures:

- Check and select the CMR Resources based on the preference rules defined by the CMR Subscriber for the current communication.

- If there is no CMR Resources defined based on the preference rules for the current communication, the CMR Server SHALL select the default CMR Resources (DefaultCMRResourceIdList2) defined by the CMR Subscriber.

- If there is no default CMR Resources defined by the CMR Subscriber, the CMR Server SHALL select the default CMR Resources set by the SP (DefaultCMRResourceIdList in the SystemSetting).

- If there is no default CMR Resources defined by the SP, the CMR Server SHALL select the system default CMR Resources.

The CMR Server SHALL select the CMR Resources based on CMR Subscriber's preference rules as following:

- When the invoked communication matches only one criterion (e.g. GroupUserCriterion), the CMR Server SHALL select the CMR Resources based on the matched criterion.

- When the invoked communication matches more than one criterion, the CMR Server SHALL select the CMR Resources associated with the criterion with the highest priority in the SettingPriority. For example, when the CMR Subscriber has defined the SettingPriority as following:

  - Time: priority =1
  - Group: priority=2

  If the invoked communication matches both TimeCriterion and GroupUserCriterion, the CMR Server SHALL select the CMR Resources based on TimeCriterion.

The CMR Server SHALL select the CMR Resources based on the criterion in the preference rules as following:

- GroupUserCriterion

  The CMR Server SHALL identify the group by using the calling party's identity in case of the service is CMRBT of called party or CMRT of called party; The CMR Server SHALL identify the group by using the called party's identity in case of the service is CMRBT of calling party or CMRT of calling party; The CMR Server SHALL select the CMR Resources based on the identified group.

- TimeCriterion

  The CMR Server SHALL select the CMR Resources based on the time the communication occurred.

- LocationCriterion

  When receiving CMR service initial request, the CMR Server SHALL decide to get which party's location information if there is LocationCriterion setting.

  - For CMRBT service, the CMR Server SHALL get the called party's location information.

■ For CMRT service, the CMR Server SHALL get the calling party's location information.

There are two ways for the CMR Server to get location information:

■ Ask for the location information from Location Enabler directly

■ Subscribe to a list of CMR Subscribers and get location notifications, store the received location information locally.

The CMR Server SHALL generate the CMR Resources based on the location information when LocationRing is TRUE.

The CMR Server SHALL select the CMR Resources based on the location information when LocationRing is FALSE.

- PresenceCriterion

When receiving CMR service initial request, the CMR Server SHALL decide to get which party's presence information if there is PresenceCriterion setting.

■ For CMRBT service, the CMR Server SHALL get the called party's presence information.

■ For CMRT service, the CMR Server SHALL get the calling party's presence information.

There are two ways for the CMR Server to get presence information:

■ Ask for the presence information from Presence Enabler directly

■ Use subscribe and notify method to get the presence status of a list of CMR Subscribers residing in SIP/IP core network and store the received presence information locally .

The CMR Server SHALL generate the CMR Resources based on the presence information when PresenceRing is TRUE.

The CMR Server SHALL select the CMR Resources based on the presence information when PresenceRing is FALSE.

If there are more than one CMR Resource are selected based on the matched criteria, the CMR Server SHALL select the CMR Resources based on the PresentationMode in PresentationRule.

6.2 Local Ringing Generation Policy

The local ring generation policy apples to SIP/IP core network.

The CMR Client SHOULD develop its local policy regarding local ring back tone generation for CMRBT service.

When receiving the alerting message, the CMR Client could notify the CMR End User (e.g. playing the local ring back tone or vibrating) that another call party is ringing if there is neither audible (audio or video) CMR Resources media received nor audible (audio or video) CMR Resource files downloaded.

The CMR Client SHOULD develop its local policy regarding local ringing tone generation for CMRT service.

When sending SIP 180 response message, the CMR Client could notify the CMR End User (e.g. playing the local ringing tone or vibrating) that there is an incoming call if there is neither audible (audio or video) CMR Resources media received nor audible (audio or video) CMR Resource files downloaded.

7. Procedures in SIP/IP Core Network

7.1 CMRBT Procedures

In CMRBT procedures, the CMR Client refers to the CMR Client of calling party unless otherwise specified.

7.1.1 CMR Resource Delivery

This section describes three models of CMR Resource delivery for CMRBT service.

7.1.1.1 HTTP Model

The HTTP model refers to the description of the HTTP model in [ITU-T Q.3610].

7.1.1.2 Application Server Model

When the SIP/IP core network technology is based on 3GPP IMS technology, the application server model refers to the description of the early session model in [3GPP TS 24.182].

When the SIP/IP core network technology is based on ITU-T NGN technology, the application server model refers to the description of the application server model in [ITU-T Q.3610].

In addition, the CMR Server SHOULD support adding the attribute "a=keywds:CMRBT" in the session-level description of the early-session SDP (offer) associated with the CMR Resources.

The CMR Client SHOULD support identifying the CMRBT service by checking whether the early-session SDP (offer) contains "a=keywds:CMRBT". If the early-session SDP (offer) contains "a=keywds:CMRBT", the CMR Client SHOULD play the CMR Resources as ringing back tone when receiving alerting message.

7.1.1.3 Gateway Model

The gateway model refers to the description of the gateway model in [ITU-T Q.3610].

In addition, the CMR Server SHOULD support adding the attribute "a=keywds:CMRBT" in the session-level description of SDP (answer) associated with the CMR Resources.

The CMR Client SHOULD support identifying the CMRBT service by checking whether the SDP (answer) contains the attribute "a=keywds:CMRBT". If the SDP (answer) contains the "a=keywds:CMRBT", the CMR Client SHOULD play the CMR Resources as ring back tone when receiving alerting message.

7.1.2 CMR Presentation Control

There are two models of presentation control:

- Pre-configured: the control instruction is preconfigured by the CMR Subscriber in the CMR Server.
- Client initiated: the control instruction is send by the CMR Client directly.

Following procedures apply to two cases unless otherwise specified：

- Both calling party and called party belong to the same CMR Server.
- Calling party and called party belong to different CMR Servers.

7.1.2.1 Filtering

Filtering is a presentation control function which allows the CMR End User to select not to experience the CMR Resources according to the filter setting defined by the CMR End User.

Both server pre-configured and client initiated models are supported.

For server pre-configured model, the filtering setting is only applicable when a calling party who is a CMR Subscriber has configured the FilterSetting. For client initiated model, the filter setting is set in the CMR Client by the calling party.

How to filter all the CMR Resources is described in this section. The procedure about filter based on MediaType in the FilterSetting refers to appendix D.1.

7.1.2.1.1   CMR Server Procedure

When receiving CMR service initial request (e.g. SIP request message), the CMR Server of calling party SHALL check whether the calling party has configured the filter setting or whether there is a filter indication received from the CMR Client.

If there is a tag "g.cmr" in "Reject-Contact" header in the session request message or if all the CMR Resources are to be filtered according to the FilterSetting pre-configured on the CMR Server, the CMR Server of calling party SHALL

- Insert the tag "g.cmr" in "Reject-Contact" header if not existing in the session request message

- Send the session request message to the Remote CMR Environment.

- Remove the received CMR Resources related information when receiving 18X message

    - remove the early-session SDP offer with session level attribute "a=keywds:CMRBT" for application server model.

    - remove SDP answer with session level attribute "a=keywds:CMRBT"for gateway model.

    - remove Alert-Info/Call-Info headers for HTTP model

- Forward the SIP 18X message to the CMR Client of calling party.

- Not select and present the CMR Resources of calling party.

If there is a tag "g.cmr" in "Reject-Contact" received in the session request message, the CMR Server of called party SHALL not select and present the CMR Resources of the called party.

7.1.2.1.2   CMR Client Procedure

The CMR End User is able to pre-configure the filter setting in the CMR Client or insert it when initiating a call.

The CMR Client SHOULD check whether the CMR Resources are to be filtered for the call according to the filter setting. If the CMR Resources are to be filtered, the CMR Client of calling party SHOULD:

- Insert the tag "g.cmr" in the "Reject-Contact" in the session request message to the CMR Server if all the CMR Resources are to be filtered.

- When receiving the SIP 18X messages

    - Reject the SDP offer (e.g. by setting the port number of all the media streams to zero) in the SDP answer if there is early-session SDP offer with session level attribute "a=keywds:CMRBT" received

    - ignore the URIs in Call-Info/Alert-Info header if exist in the 18X message

    - how to filter the CMR Resources is not specified if there is SDP answer with session level attribute "a=keywds:CMRBT" received in the response message for gateway model.

7.1.2.2   Priority

Priority is used to control which party's CMR Resources would be presented to the CMR End User in the case of both calling party and called party has subscribed CMRBT service.

Only server pre-configured model is supported.

The CMRBT priority policy is only applicable when a calling party who is a CMR subscriber has configured it.

Following section describes the CMR Server procedure according to the priority configured by the calling party CMR Subscriber in case the CMR Resources are not filtered.

7.1.2.2.1 CMR Server Procedure

When receiving a CMR service initial request (e.g. SIP request message), the CMR Server of calling party SHALL check the pre-configured priority policy.

If the pre-configured priority policy indicating that the calling party has higher priority, the CMR Server of calling party SHALL execute following actions:

- Insert the tag "g.cmr" into the "Reject-Contact" header if not existing in the session request message and send the session request message to the Remote CMR Environment;

- When receiving 18X message, the CMR Server of calling party SHALL remove the received CMR Resources related information:

  ■ remove the early-session SDP with session level attribute "a=keywds:CMRBT" for application server model

  ■ remove the SDP answer with session level attribute "a=keywds:CMRBT" for gateway model

  ■ remove Alert-Info/Call-Info headers for HTTP model

- Select and present the CMR Resource to the calling party following the procedures defined in 7.1.1

If the pre-configured priority policy indicating that called party has higher priority, the CMR Server of calling party SHALL execute the following actions:

- forward the session request message

- when receiving 18X message

  ■ if there is SDP offer with session level attribute "a=keywds:CMRBT" or SDP answer with session level attribute "a=keywds:CMRBT"or Alert-Info/Call-Info received in the 18X message, the CMR Server SHALL forward the 18X message, not present the CMR Resources of the calling party;

  ■ otherwise, the CMR Server of calling party SHALL present the CMR Resources of calling party to the CMR End User following the procedures defined in 7.1.1.

When receiving a CMR service initial request from the Remote CMR Environment, the CMR Server of called party SHALL support checking if there is a "g.cmr" in "Reject-Contact" header in the request. If there is a "g.cmr" in "Reject-Contact" header, the CMR Server of called party SHALL not select and present the CMR Resources of the called party. Otherwise, the CMR Server SHALL select and present the CMR Resources of the called party after receiving alerting message.

7.1.2.3 Stop

Stop is a presentation control function to stop presenting current CMR Resource.

Only client initiated model is supported.

In case of server played model (application server model or gateway model), in-band method (DTMF) is used to send the stop request. The in-band method of transferring DTMF refers to [RFC2833]. The CMR Server is responsible for stopping current playing CMR Resource after receiving the stop request from the CMR Client of calling party.

Note: The definition of which DTMFs are used is implementation dependent.

In case of client played model (HTTP model), the CMR Client is responsible for stopping current playing CMR Resource locally.

7.1.2.3.1 CMR Server Procedure

In case server played model (application server model or gateway model) is used, the CMR Server SHALL request the CMR Resource Server to collect DTMF digits from the CMR Client of calling party during CMR Resource presentation and receive the collected DTMF digits from the CMR Resource Server.

When receiving stop request, the CMR Server SHALL request CMR Resource Server to stop the current playing CMR Resource and play the default CMR Resource.

7.1.2.3.2 CMR Client Procedure

In case of server played model, the CMR Client SHALL support sending the stop request using in-band method during the CMR Resource presentation.

In case of HTTP model, the CMR Client SHALL not send the stop request and SHALL stop current playing CMR Resource locally based on the stop instruction from CMR End User.

7.1.2.4 Change

Change is a presentation control function to stop playing the current CMR Resources and to play the CMR Resources based on the change instruction received from the CMR Client.

Only client initiated model is supported.

The description of the change functions is shown in the following table.

Instruction Name	Description
Previous /Next	Select to play the previous/next CMR Resource in the CMR Resource list in Preference Settings set by the CMR Subscriber. Note: Only applicable when CMR Subscriber has set more than one CMR Resources to be presented randomly/sequentially
Sepcial CMR Resource Identity	Select to play a special CMR Resource in the CMR Subscriber's Personal Resource Library.
Change between calling CMR/called CMR	Select to play another party CMR Subscriber's CMR Resource. Note: Only applicable when calling and called party belong to the same CMR Server.

Table 88: Description of CMR Resource Change Functions

In case of server played model (application server model and gateway model), in-band method (DTMF) is used to send the change request. The in-band method of transferring DTMF refers to [RFC2833]. The CMR Server is responsible for stopping playing current CMR Resource after receiving the change instruction and select proper CMR Resource to play based on the change instruction.

Note: The definition of which DTMFs are used is implementation dependent.

The change function is not supported for HTTP model.

7.1.2.4.1 CMR Server Procedure

In case server played model (application server model and gateway model) is used, the CMR Server SHALL request the CMR Resource Server to collect DTMF digits from the CMR Client of calling party and receive the collected DTMF digits from the CMR Resource Server.

When receiving change request, the CMR Server SHALL select the proper CMR Resource based on the change request(Next, Previous, Sepcial CMR Resource Identity etc.) and the CMR Subscriber's Preference Settings, send request to the CMR Resource Server to stop the current CMR Resource presentation and play the selected resource.

7.1.2.4.2 CMR Client Procedure

In case of server played model, the CMR Client of calling party SHALL support sending the change request using in-band method during CMR Resource presentation.

In case of HTTP model, the CMR Client of calling party SHALL support notifying the CMR End User that change function can't be used.

7.1.2.5 Continue

Continue is a presentation control function to continue playing current CMR Resources upon a particular event (e.g. when a call is answered).

Only Pre-configured model is supported.

In the case of server played model (application Server mode and gateway mode), the CMR Server is responsible for continuing playing current CMR Resource based on the rules configured in the CMR Server.

In the case of HTTP model, continue is not supported.

7.1.2.5.1 CMR Server Procedure

Upon receiving the final response from the called party, the CMR Server SHALL decide whether the CMR Resource need to be stopped or continuously played based on SP's policy and the subscribers' preferences.

If the CMR Resource needs to be stopped, the CMR Server SHALL instruct the CMR Resource Server to stop playing CMR Resource.

If the CMR Resource needs to be continuously played, the CMR Server SHALL:

- send a SIP ACK to called party;

- contact the CMR Resource Server to request conference resource for mixing the media of CMR Resources and the media of regular session.

- send a SIP re-INVITE request to called party with a SDP offer containing the media information of the regular session received in the last SDP offer from calling party, the IP address and ports of the CMR Resource Server for receiving and sending regular session stream.

- send a SIP UPDATE request to the calling party with a SDP offer composed of both the media information of the regular session received in the last SDP answer from the called party and the media information of CMR Resources apart from those in the last SDP answer from the called party, the IP address and ports of the CMR Resource Server for receiving and sending the mixed stream;

- send a SIP 200 (OK) of INVITE request to the calling party upon receiving a SIP 200 (OK) response of UPDATE request from the calling party;

- instruct the CMR Resource Server to start to mix the media of CMR Resources and the media of the regular session for calling party and just forward the media of regular session to the called party upon receiving the SIP ACK from the calling party.

7.1.2.5.2 CMR Client Procedure

In the case of server played model (application server model and gateway model), there is no special requirements on the CMR Client for the continue function.

7.1.3 Online Copy

Online copy operation is initiated by the CMR Client when the CMR Resource is being presented. The CMR Subscriber of calling party is able to copy the CMR Resources from called party's Personal Resource Library in case both calling and called party CMR Subscribers belong to the same CMR Server.

In case of server played model (application server model or gateway model), in-band method (DTMF) is used to send the on-line copy request. The in-band method of transferring DTMF refers to [RFC2833].

Note: The definition of which DTMFs are used is implementation dependent.

The on-line copy function is not supported for HTTP model.

7.1.3.1 CMR Server Procedure

When using in-band method, the CMR Server SHALL send a message to request the CMR Resource Server to collect digits from the CMR Client during CMRT presentation and receive the collected digits transferred from the CMR Resource Server.

When receiving the copy request, the CMR Server SHALL check whether the called party CMR Subscriber allows his/her personal CMR Resource to be copied.

If the called party CMR Subscriber allows his/her personal CMR Resource to be copied, the CMR Server SHALL check whether the calling party has subscribed CMRBT service.

- If the calling party has subscribed CMRBT service, the CMR Server SHALL replicate the requested CMR Resource to the Personal Resource Library of the calling party.

- If the calling party hasn't subscribed CMRBT service, depends on the Service Provider's policy,

  - The CMR Server MAY reject the copy request; or
  - The CMR Server MAY send a message to the CMR Client to trigger the End User subscribe to CMRBT service. After receiving the subscription confirm information, the CMR Server MAY execute service subscription for the calling party End User and replicate the requested CMR Resource to the Personal Resource Library of calling party.

Before replicate the requested CMR Resource to the calling party's Personal Resource Library, the CMR Server MAY send a message to the CMR Client for confirming the copy. The CMR Server MAY notify the copy result to the calling party by sending a message after handling the copy request. How the messages (for confirmation the copy or for notification of the copy result) are sent is out of scope.

7.1.3.2 CMR Client Procedure

The CMR Client of calling party SHALL support sending the online copy request using in-band method during CMR Resource presentation.

7.2 CMRT Procedures

In CMRT procedures, the CMR Client refers to the CMR Client of called party unless otherwise specified.

7.2.1 CMR Resource Delivery

This section describes three models of CMR Resource delivery for CMRT service.

7.2.1.1 HTTP Model

When the SIP/IP core network technology is based on 3GPP technology, the HTTP model refers to the description of down and play model in [3GPP TS 24.183].

When the SIP/IP core network technology is based on ITU-T NGN technology, the HTTP model refers to the description of the HTTP model in [ITU-T Q.3611].

7.2.1.2 Application Server Model

When the SIP/IP core network technology is based on 3GPP technology, the application server model refers to the description of the early session model in [3GPP TS 24.183].

When the SIP/IP core network technology is based on ITU-T NGN technology, the application server model refers to the description of the application server model in [ITU-T Q.3611].

In addition, the CMR Server SHOULD support adding the attribute "a=keywds:CMRT" in the session-level description of the early-session SDP associated with the CMR Resources.

The CMR Client SHOULD support identifying the CMRT service by checking whether the early-session SDP contains "a=keywds:CMRT". If the early-session SDP contains the "a=keywds:CMRT", the CMR Client SHALL play the CMR Resources as ringing tone when receiving session request message.

7.2.1.3 Gateway Model

The CMR Enabler SHALL support the gateway model defined in [ITU-T Q.3611].

In addition, the CMR Server SHALL support adding the attribute "a=keywds:CMRT" in the session-level description of the SDP associated with the CMR Resources. The CMR Client SHALL support identifying the CMRT service by checking whether the session SDP contains "a=keywds:CMRT". If the SDP contains the "a=keywds:CMRT", the CMR Client SHALL play the CMR Resource as ringing tone when receiving session request message.

7.2.2 CMR Presentation Control

There are two models of presentation control:

- Pre-configured: the control instruction is preconfigured by the CMR Subscriber in the CMR Server.
- Client initiated: the control instruction is send by the CMR Client directly.

Following procedures apply to two cases unless otherwise specified:

- Both calling party and called party belong to the same CMR Server.
- Calling party and called party belong to different CMR Servers.

7.2.2.1 Filtering

Filtering is a presentation control function which allows the CMR End User to select not to experience the CMR Resources according to the filter setting defined by the CMR End User.

Both server pre-configured and client initiated models are supported.

For server pre-configured model, the filter setting is only applicable when a called party who is a CMR Subscriber has configured the FilterSetting.

For client initiated model, the filter setting is set in the CMR Client by the called party.

How to filter all the CMR Resources is described in this section. The procedure about filter based on MediaType in the FilterSetting refers to appendix D.2.

7.2.2.1.1 Server Procedure

When receiving CMR service initial request (e.g. SIP request message), the CMR Server of called party SHALL check whether the called party has configured the filter setting.

 If all the CMR Resources are to be filtered according to the FilterSetting pre-configured on the CMR Server, the CMR Server of called party SHALL:

- Remove Alert-Info /Call-Info header if received in SIP INVITE message and forward the message to the CMR Client of called party for HTTP model

- Remove the SDP offer with session level attribute "a=keywds:CMRT" if received in PRACK/UPDATE message and forward the message to the CMR Client of called party for application server model/gateway model.

- When receiving the 200 OK response message to PRACK/UPDATE from CMR Client of called party,

■ if there is SDP offer with session level attribute "a=keywds:CMRT" received in the previous PRACK/UPDATE message, send the response message to the Remote CMR Environment with the SDP answer to reject the SDP offer (e.g. by setting the port number of all the media streams to zero).

■ otherwise, forward the response message to the Remote CMR Environment.

- Not select and present the CMR Resource of the called party.

7.2.2.1.2 Client Procedure

The CMR End User is able to pre-configure the filter setting in the CMR Client.

When receiving SIP message, the CMR Client SHOULD check whether the CMR Resources are to be filtered for the call according to the filter setting. If the CMR Resources are to be filtered, the CMR Client SHALL

- ignore the URIs in Call-Info/Alert-Info header in the session request message when HTTP model is used

- send the acknowledge message with all port numbers set to "0" in the SDP answer if there is an SDP offer with "a=keywds:CMRT" in the SIP message

7.2.2.2 Priority

Priority is used to control which party's CMR Resource would be presented to the CMR End User in the case of both calling party and called party has subscribed CMRT service.

Only server pre-configured model is supported. The CMRT priority policy is only applicable when a called party who is a CMR Subscriber has configured it.

Following section describes the CMR Server procedure according to the priority configured by the called party CMR Subscriber in case the CMR Resources are not filtered.

7.2.2.2.1 CMR Server Procedure

When receiving a CMR service initial request (e.g. SIP request message) from the Remote CMR Environment, the CMR Server of called party SHALL support checking if there is pre-configured priority policy in the CMR Server before starting CMR Resource presentation.

If the pre-configured priority policy indicating that the called party has higher priority, the CMR Server of called party SHALL execute following actions:

- Remove the Alert-Info /Call-Info headers if receive in the SIP INVITE message, insert the Alert-Info/Call-Info headers containing the URIs of the called party's CMR Resources and forward the message to the CMR Client of called party for HTTP model as normal flows described in 7.2.1.1.

- Remove the SDP offer with session level attribute "a=keywds:CMRT" if received in the PRACK/UPDATE message, for application server model/gateway model, insert the CMR media information into the SIP PRACK/UPDATE message and execute media negotiation between the CMR Client and the CMR Resource Server for application server model/gateway model as normal flows described in 7.2.1.2 and 7.2.1.3.

- When receiving the 200 OK response message to PRACK/UPDATE from CMR Client of called party,

  ■ if there is SDP offer with session level attribute "a=keywds:CMRT" received in the previous PRACK/UPDATE message, send the response message to the Remote CMR Environment with the SDP answer to reject the SDP offer (e.g. by setting the port number of all the media streams to zero).

  ■ otherwise, forward the response message to the Remote CMR Environment.

- Present the CMR Resources of the called party after receiving alerting message.

If there is a pre-configured priority policy indicating that calling party has higher priority, the CMR Server of called party SHALL not select and present the CMR Resource of the called party when there is Alert-Info/ Call-Info received in the SIP

INVITE message or SDP offer with session level attribute "a=keywds:CMRT" in SIP PRACK/UPDATE message; Otherwise the CMR Server of called party MAY present the CMR Resource of the called party to the CMR End User.

7.2.2.3 Stop

Stop is a presentation control function to stop presenting current CMR Resources.

Only client initiated model is supported.

In case of server played model (application server model and gateway model), in-band method (DTMF) is used to send the stop request. The in-band method of transferring DTMF refers to [RFC2833]. The CMR Server is responsible for stopping current playing CMR Resource after receiving the stop request from the CMR Client of called party.

Note: The definition of which DTMFs are used is implementation dependent.

In case of client played model (HTTP model), the CMR Client is responsible for stopping current playing CMR Resource locally.

7.2.2.3.1 Server Procedure

When using in-band method, the CMR Server SHALL request the CMR Resource Server to collect DTMF digits from the CMR Client of called party and receive the collected DTMF digits from the CMR Resource Server.

When receiving stop request, the CMR Server SHALL send request to the CMR Resource Server to stop the current playing CMR Resource and play the default CMR Resource.

7.2.2.3.2 Client Procedure

In case of server played model, the CMR Client of called party SHALL support sending the stop request using in-band method during CMR Resource presentation.

In case of HTTP model, the CMR Client of called party SHALL not send the stop request and SHALL stop current playing CMR Resource locally based on the stop instruction from CMR End User.

7.2.2.4 Change

Change is a presentation control function to change the current playing CMR Resource to another one. The change function is not applicable for CMRT service.

7.2.2.5 Continue

Continue for CMRT refers to the continue description in [3GPP TS 24.183].

7.2.3 Online Copy

Online copy operation is initiated by the CMR Client when the CMR Resource is being presented. The CMR Subscriber of calling party is able to copy the CMR Resources from called party's Personal Resource Library in case both calling and called party CMR Subscribers belong to the same CMR Server.

In case of server played model (application server model and gateway model), in-band method (DTMF) is used to send the on-line copy request. The in-band method of transferring DTMF refers to [RFC2833].

Note: The definition of which DTMFs are used is implementation dependent.

The on-line copy function is not supported for HTTP model.

7.2.3.1 CMR Server Procedure

When using in-band method, the CMR Server SHALL send a message to request the CMR Resource Server to collect digits from the CMR Client during CMRT presentation and receive the collected digits transferred from the CMR Resource Server.

When receiving the copy request, the CMR Server SHALL check whether the calling party CMR Subscriber allows his/her personal CMR Resource to be copied.

If the calling party CMR Subscriber allows his/her personal CMR Resource to be copied, the CMR Server SHALL check whether the called party has subscribed CMRT service.

- If the called party has subscribed CMRT service, the CMR Server SHALL replicate the requested CMR Resource to the Personal Resource Library of the called party.

- If the called party hasn't subscribed CMRT service, depends on the Service Provider's policy:

  - The CMR Server MAY reject the copy request; or

  - The CMR Server MAY send a message to the CMR Client to trigger the End User subscribe to CMRT service. After receiving the subscription confirm information, the CMR Server MAY execute service subscription for the called party End User and replicate the requested CMR Resource to the Personal Resource Library of called party.

Before replicate the requested CMR Resource to the called party Person Resource Library, the CMR Server MAY send a message to the CMR Client for confirming the copy. The CMR Server MAY notify the copy result to the called party by sending a message after handling the copy request. How the messages (for confirmation the copy or for notification of the copy result) are sent is out of scope.

7.2.3.2　CMR Client Procedure

The CMR Client of called party SHALL support sending the online copy request using in-band during CMR Resource presentation.

8. Procedures in CS Core Network

In CMRBT procedures, the CMR Client refers to the CMR Client of calling party unless otherwise specified.

8.1   CMRBT Procedures

8.1.1   Resource Delivery

When the CS core network technology is based on 3GPP CS domain as described in [3GPP TS 23.002], CMRBT general resource delivery procedure refers to [3GPP TS 23.205] sub-clause 14.10 Customized Alerting Tone.

8.1.1.1   CMR Server Procedure

The CMR Server SHALL check whether the calling party or called party has subscribed CMRBT service when receiving the initial call (e.g. Initial Address Message) from the CS core network. The CMR Server SHALL send back a response message (e.g. Address Complete Message) if it need to play CMR Resource to the CMR Client.

For audio ring back tone, the CMR Server SHALL instruct the CMR Resource Server to play the selected CMR Resource after the connection is established between the CMR Resource Server and the CMR Client.

For video ring back tone, the CMR Server SHALL support setup a H.324 connection between the CMR Resource Server and the CMR Client, instruct the CMR Resource Server to play the selected CMR Resource to the CMR Client.

After receiving release message from the network, the CMR Server SHALL support release the connection between the CMR Resource Server and the CMR Client and instruct the CMR Resource Server to stop playing the CMR Resources.

8.1.1.2   CMR Client Procedure

The procedure of the CMR Client refers to [3GPP TS 24.008].

8.1.2   Presentation Control

8.1.2.1   Filtering

Only pre-configured model is supported.

Filtering is only supported when calling party and called party belong to the same CMR Server in the CS core network.

When receiving the CMR service initial request (e.g. call request), the CMR Server SHALL support checking if there is a filter setting pre-configured in it. If all the CMR Resources are to be filtered according to the FilterSetting pre-configured, the CMR Server SHALL not present the CMR Resources and terminate the CMR service. (The core network should present the normal ring back tone if CMRBT is filtered by the calling party).

The procedure about filter based on MediaType in the FilterSetting refers to appendix D.3.

8.1.2.2   Priority

Priority is used to control which party's CMR Resources would be presented to the End User in the case of both calling party and called party has subscribed CMRBT service.

Only pre-configured model is supported. The CMRBT priority policy is only applicable when a calling party who is a CMR Subscriber has configured it.

Priority is only supported when calling and called party belong to the same CMR Server in the CS core network.

After receiving the CMR service initial request from the connected core network, the CMR Server SHALL support checking if there is a priority policy pre-configured in the CMR Server. Base on the priority policy, the CMR Server SHALL select and present the CMR Resources of the call party who has higher CMRBT service priority to the CMR Client.

8.1.2.3 Stop

Only in-band method is supported. The method of transferring DTMF refers to [3GPP TS 23.014].

The CMR Server and the CMR Resource server are responsible for stopping playing current CMR Resource when receiving the stop instruction. The default ring back tone can be played by the CMR Resource Server when current playing CMR Resource is stopped.

8.1.2.3.1 CMR Server Procedure

The control instruction would firstly arrival at the CMR Resource Server. The CMR Server SHALL support receiving this instruction from the CMR Resource Server.

The CMR Server SHALL send request to the CMR Resource Server in order to stop playing the current CMR Resource and play the default resource.

8.1.2.3.2 CMR Client Procedure

The CMR Client of calling party SHOULD support sending the control instructions using in-band method during the CMR Resource presentation.

8.1.2.4 Change

Only client initiated model is supported.

Only in-band method is supported. The method of transfer DTMF refers to [3GPP TS 23.014].

The CMR Server and the CMR Resource server is responsible for stopping current playing CMR Resource after receiving the change instruction and select proper CMR Resource to play based on the change instruction and the CMR Resource list in Preference Settings set by the CMR Subscriber.

8.1.2.4.1 CMR Server Procedure

The control instruction would firstly arrival at the CMR Resource Server.

When receiving the change instruction from the CMR Resource Server, the CMR Server SHOULD send request to the CMR Resource Server in order to stop playing the current CMR Resource and play the selected resource based on the control instruction and the CMR Resource list in Preference Settings set by the CMR Subscriber.

8.1.2.4.2 CMR Client Procedure

The CMR Client of calling party SHOULD support sending the control instructions using in-band method during the CMR Resource presentation.

8.1.3 Online Copy

Online copy operation is initiated by the CMR Client when the CMR Resource is being presented. The CMR Subscriber of calling party is able to copy the CMR Resources from called party's Personal Resource Library in case both calling and called party CMR Subscribers belong to the same CMR Server.

Only in-band method is supported. The in-band method of transferring DTMF refers to [3GPP TS 23.014].

8.1.3.1 CMR Server Procedure

The CMR Server SHALL support receiving the DTMF digitals from the CMR Client during CMR Resource presentation.

When receiving the copy request, the CMR Server SHALL check whether the called party CMR Subscriber allows his/her personal CMR Resource to be copied.

If the called party CMR Subscriber allows his/her personal CMR Resource to be copied, the CMR Server SHALL check whether the calling party has subscribed CMRBT service.

- If the calling party has subscribed CMRBT service, the CMR Server SHALL replicate the requested CMR Resource to the Personal Resource Library of the calling party.

- If the calling party hasn't subscribed CMRBT service, depends on the Service Provider's policy:

  - The CMR Server MAY reject the copy request; or

  - The CMR Server MAY send a message to the CMR Client to trigger the End User to subscribe the CMRBT service. After receiving the subscription confirm information, the CMR Server MAY execute service subscription for the calling party and replicate the requested CMR Resource to the Personal Resource Library of the calling party.

Before replicate the requested CMR Resource to the Personal Resource Library of the calling party, the CMR Server MAY send a message to the CMR Client for confirming the copy. The CMR Server MAY notify the copy result to the calling party by sending a message after handling the copy request. How the messages (for confirmation the copy or for notification of the copy result) are sent is out of scope.

8.1.3.2 CMR Client Procedure

The CMR Client of calling party SHALL support sending the online copy request using in-band method during CMR Resource presentation.

9. Security

9.1 CMR Service Authentication and Authorization

When receiving CMR service initial request from the CMR Client or from the CMR Enabled Application, the CMR Server SHALL authenticate the CMR Subscriber by checking the subscriber's identity (e.g., P-Asserted-Identity in the same trusted domain). The CMR Subscriber is authorized to request the CMR service and the CMR Resources based on the mechanism Access Control List (ACL).

Note: To use the CMR service, the CMR Client needs to connect to the core network. The CMR Client SHOULD comply with the security mechanisms defined in underlying core network for accessing the core network. When the SIP/IP core network corresponds with 3GPP IMS, the CMR Client SHOULD support the access security mechanisms defined in [3GPP TS 33.203]/ [RFC 3261]. When the CS core network corresponds with 3GPP core network, the CMR Client SHOULD support the network access layer security mechanism defined in [3GPP TS 33.102].

9.2 CMR Resource Protection

9.2.1 HTTP Model

When using HTTP model in delivering CMR Resources, the CMR Server needs to insert the URIs of CMR Resources into the Call-Info and/or Alert-Info headers in SIP request or response messages. However, the use of the Call-Info and Alert-info header field may pose a security risk. If a called party fetches the URIs provided by a malicious caller, the called party may be at risk for displaying inappropriate or offensive content dangerous or illegal content, and so on.

To prevent the potential security risks when HTTP model is used to delivery CMR Resources, the CMR Server SHOULD remove the Call-Info and/or Alert-Info headers received in the SIP request or response messages when the CMR Server needs to present the CMR Resources.

When HTTP model is used, in addition to the CMR service authentication an authorization described in 8.1, the CMR Server SHOULD provide the information needed to authorize the HTTP requestor such as calling party (for CMRBT) or called party (for CMRT) and CMR Resources information to the CMR Resource Server. This enables the CMR Resource Server to authorize the requestor before delivering CMR Resources to the CMR Client.

9.2.2 Application Server/Gateway Model

When application server or gateway model is used, CMR Resources are delivered before regular session establishment. The mechanisms for CMR Resource (i.e., early media) integrity and confidentiality protection are not mature enough. Hence, CMR Resource protection is not defined in this specification.

9.2.3 Content-type Protection

When receiving MIME body in SIP INVITE or 18X response messages, the CMR Client SHOULD not present content in the MIME body as CMR Resource (i.e. ring back tone or ringing tone) to prevent unauthorized or illegal CMR Resources being presented to the CMR End User.

9.3 Security between CMR Server and CMR Management Client

The CMR Server and the CMR Management Client communicate over CMR-1 supporting HTTP binding.

The authentication between the CMR Server and the CMR Management Client is based on the mechanism defined in [HTTP]. Implementations conforming to this specification MUST support this mechanism for "Basic" and "Digest Access Authentication". The Base64 character encoded "Basic" and "MD5" algorithm of the "Digest Access Authentication" authentication schemes MAY be supported. The HTTP headers and parameters that MUST be supported are described in the previous sections for request and response headers.

The CMR Server implementations conforming to this specification MAY support both the ability to challenge unauthenticated requests and also accept authentication request headers in a request; which will not require subsequent challenge responses unless some part of the credential is incorrect. The latter requirement is required to address the need for minimal request/response traffic for mobile networks.

The authentication mechanisms defined by [HTTP] address the protection of the authentication credentials. However, the remainder of the HTTP request and response messages are available to the eavesdropper. For more robust security for the HTTP connection, TLS 1.1 [RFC4346], TLS 1.2 [RFC5246], or some forms of upgrading to TLS within HTTP [RFC2817] [RFC2818] SHOULD be used.

When HTTP operating over TLS:

- The CMR Server SHALL support TLS 1.1 [RFC5246]

- The CMR Server SHOULD support TLS 1.2 [RFC4346]

- The CMR Management Client SHALL support TLS 1.1 or TLS 1.2

- The CMR Server SHALL identify which TLS version the CMR Management Client is using.

9.4   Security between CMR Server and CMR Portal

The CMR Server and the CMR Portal communicate over CMR-5/CMR-6/CMR-7 supporting either HTTP binding or WEB Service binding.

The CMR Server and the CMR Portal could be deployed in the same domain or different domains. The mechanisms to secure (e.g. Authentication, Authorization, Integrity, Confidentiality) the communications between these two components MAY use the network domain security mechanisms defined in [3GPP TS 33.210] and are dependent on deployment choices.

9.5   Security between CMR Server and CMR Enabled Application

The CMR Server and the CMR Enabled Application communicate over CMR-4 supporting HTTP binding.

The CMR Server and the CMR Enabled Application could be deployed in the same domain or different domains. The mechanisms to secure (e.g. Authentication, Authorization, Integrity, Confidentiality) the communications between these two components MAY use the network domain security mechanisms defined in [3GPP TS 33.210] and are dependent on deployment choices.

Appendix A.   Change History   (Informative)

A.1   Approved Version History

Reference	Date	Description
Approved Version OMA-TS-CMR-V1_0	20 Mar 2012	Status changed to Approved by TP: TP ref# OMA-TP-2012-0113-INP_CMR_V1.0_ERP_for_final_Approval

Appendix B.   Static Conformance Requirements   (Normative)

The notation used in this appendix is specified in [SCRRULES].

B.1   SCR for CMR Client

B.1.1   SCR for CMR Procedure in SIP/IP Core Network

Item	Function	Reference	Requirement
CMR-RBT-C-001-M	CMRBT Resource delivery over SIP/IP Core Network	Section 7.1.1	
CMR-RBT-C-002-M	CMRBT Filtering over SIP/IP Core	Section 7.1.2.1	
CMR-RBT-C-003-M	Stop CMRBT presentation over SIP/IP Core	Section 7.1.2.3	
CMR-RBT-C-004-M	Change CMRBT presentation over SIP/IP Core	Section 7.1.2.4	
CMR-RBT-C-005-M	Online copy CMRBT over SIP/IP Core	Section 7.1.3	
CMR-RT-C-001-M	CMRT Resource delivery over SIP/IP Core Network	Section 7.2.1	
CMR-RT-C-002-M	Stop CMRT presentation over SIP/IP Core	Section 7.2.2.3	
CMR-RT-C-003-M	Online copy CMRT over SIP/IP Core	Section 7.2.3	

B.1.2   SCR for CMR Procedure in CS Network

Item	Function	Reference	Requirement
CMR-RBT-C-006-M	CMRBT Resource delivery over CS Network	Section 8.1.1	
CMR-RBT-C-007-M	Stop CMRBT presentation over CS	Section 8.1.2.3	
CMR-RBT-C-008-M	Change CMRBT presentation over CS	Section 8.1.2.4	
CMR-RBT-C-009-M	Online copy CMRBT over CS	Section 8.1.3	

B.2   SCR for CMR Server

B.2.1   SCR for CMR Management Function

Item	Function	Reference	Requirement
CMR-MGT-S-001-M	Group and member management function	Section 5.4.1, 5.7.1	
CMR-MGT-S-002-M	Resource search function	Section 5.4.2, 5.7.2	
CMR-MGT-S-003-M	Personal Resource Library management excluding copy the CMR Resource experienced in the finished communications function.	Section 5.4.3.1-5.4.3.6, 5.7.3	
CMR-MGT-S-004-O	Copy the CMR Resource experienced in the finished communications function	Section 5.4.3.7, 5.7.3	
CMR-MGT-S-005-M	CMRResource presentation Rule management	Section 5.4.6, 5.7.4	
CMR-MGT-S-006-M	CMR Resource metadata management	Section 5.6.1,5.4.4	
CMR-MGT-S-007-M	CMR Resource Box management	Section 5.6.2,5.4.5	
CMR-MGT-S-008-M	Service subscription management Function	Section 5.7.5	
CMR-MGT-S-009-M	System settings management function	Section 5.7.6	
CMR-MGT-S-010-M	CMR Resource report	Section 5.8.1	
CMR-MGT-S-011-M	CMR service management report	Section 5.8.2	

B.2.2   SCR for CMR Interacting with the CMR Enabled Applications

Item	Function	Reference	Requirement

Item	Function	Reference	Requirement
CMR-IWA-S-001-M	CMR service request &response function	Section 5.5	

B.2.3   SCR for CMR Procedure in SIP/IP Core Network

Item	Function	Reference	Requirement
CMR-RBT-S-001-M	CMRBT Resource delivery over SIP/IP Core Network	Section 7.1.1	CMR-RBT-C-001-M
CMR-RBT-S-002-M	CMRBT Filtering over SIP/IP Core	Section 7.1.2.1	CMR-RBT-C-002-M
CMR-RBT-S-003-M	CMRBT Priority over SIP/IP Core	Section 7.1.2.2	
CMR-RBT-S-004-M	Stop CMRBT presentation over SIP/IP Core.	Section 7.1.2.3	CMR-RBT-C-003-M
CMR-RBT-S-005-M	Change CMRBT presentation over SIP/IP Core	Section 7.1.2.4	CMR-RBT-C-004-M
CMR-RBT-S-006-M	Continue play CMRBT over SIP/IP Core	Section 7.1.2.5	
CMR-RBT-S-007-M	Online copy CMRBT over SIP/IP Core	Section 7.1.3	CMR-RBT-C-005-M
CMR-RT-S-001-M	CMRT Resource delivery over SIP/IP Core Network	Section 7.2.1	CMR-RT-C-001-M
CMR-RT-S-002-M	CMRT Filtering over SIP/IP Core	Section 7.2.2.1	
CMR-RT-S-003-M	CMRT Priority over SIP/IP Core	Section 7.2.2.2	
CMR-RT-S-004-M	Stop CMRT presentation over SIP/IP Core.	Section 7.2.2.3	CMR-RT-C-002-M
CMR-RT-S-005-M	Continue play CMRT over SIP/IP Core	Section 7.2.2.5	

B.2.4   SCR for CMR Procedure in CS Network

Item	Function	Reference	Requirement
CMR-RBT-S-008-M	CMRBT Resource delivery over CS Network	Section 8.1.1	CMR-RBT-C-006-M
CMR-RBT-S-009-M	CMRBT Filtering over CS network	Section 8.1.2.1	
CMR-RBT-S-010-M	CMRBT Priority over CS network	Section 8.1.2.2	
CMR-RBT-S-011-M	Stop CMRBT presentation over CS network.	Section 8.1.2.3	CMR-RBT-C-007-M
CMR-RBT-S-012-M	Change CMRBT presentation over CS network	Section 8.1.2.4	CMR-RBT-C-008-M
CMR-RBT-S-013-M	Online copy CMRBT over CS network	Section 8.1.3	CMR-RBT-C-009-M

Appendix C.   Signalling Flows in SIP/IP Core Network   (Informative)

C.1   CMRBT Flows

Some example flows of CMR presentation control are given in the following.
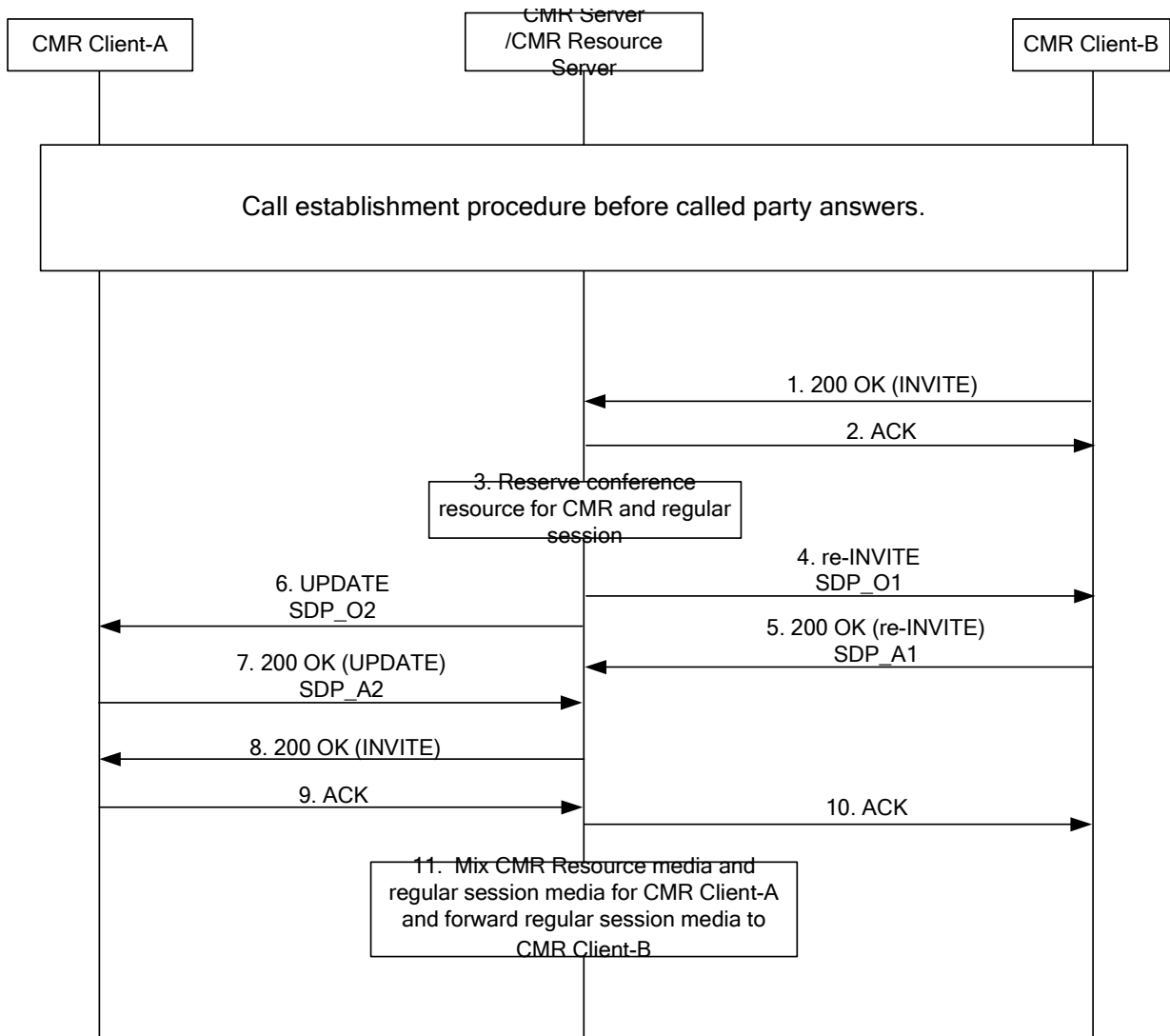
C.1.1   Continue Flow in SIP/IP Core Network

Figure 1: CMRBT Continue Flow

1   The called party answers the call. The CMR Client-B sends a SIP 200 (OK) final response to the SIP INVITE request to the CMR Server.

2   Upon receiving the final response, the CMR Server decides whether the CMR Resources need to be stopped or continuously played based on CMR Subscribers' preferences. If the CMR Resources need to be continuously played, the CMR Server sends a SIP ACK message to the CMR Client-B.

3   The CMR Server contacts the CMR Resource Server to allocate conference resource for mixing CMR Resource and the media of regular session.

4   The CMR Server sends a SIP re-INVITE request to the CMR Client-B with the SDP offer (SDP_O1) containing the media of regular session received in the last SDP offer of the CMR Client-A, and the IP address(es) and port(s) of the CMR Resource Server are provided for receiving and sending regular session stream.

5   The CMR Client-B returns a SIP 200 (OK) final response to the SIP re-INVITE request with a SDP answer(SDP_A1) containing the media of the regular session to the CMR Server.

6   The CMR Server sends a SIP UPDATE request to the CMR Client-A with the SDP offer (SDP_O2) composed of both the media of the regular session received in the last SDP answer of the CMR Client-B and the CMR Resource media components apart from those used in the last SDP answer of the CMR Client-B, and the IP address (es) and port(s) of the CMR Resource Server are provided for receiving and sending mixed stream.

7   The CMR Client-A returns a SIP 200 (OK) final response to the SIP UPDATE request with a SDP answer (SDP_A2) to the CMR Server.

8   The CMR Server sends a SIP 200 (OK) final response to the SIP INVITE request to the CMR Client-A.

9   The CMR Client-A sends a SIP ACK to the CMR Server.

10   The CMR Server forwards the SIP ACK to the CMR Client-B.

11   The CMR Server instructs the CMR Resource Server to start to mix the media of CMR Resources and the media of regular session , the CMR Resource Server sends the mixed media to the CMR Client-A and just forward the media of regular session to the CMR Client-B upon receiving the SIP ACK from calling party.
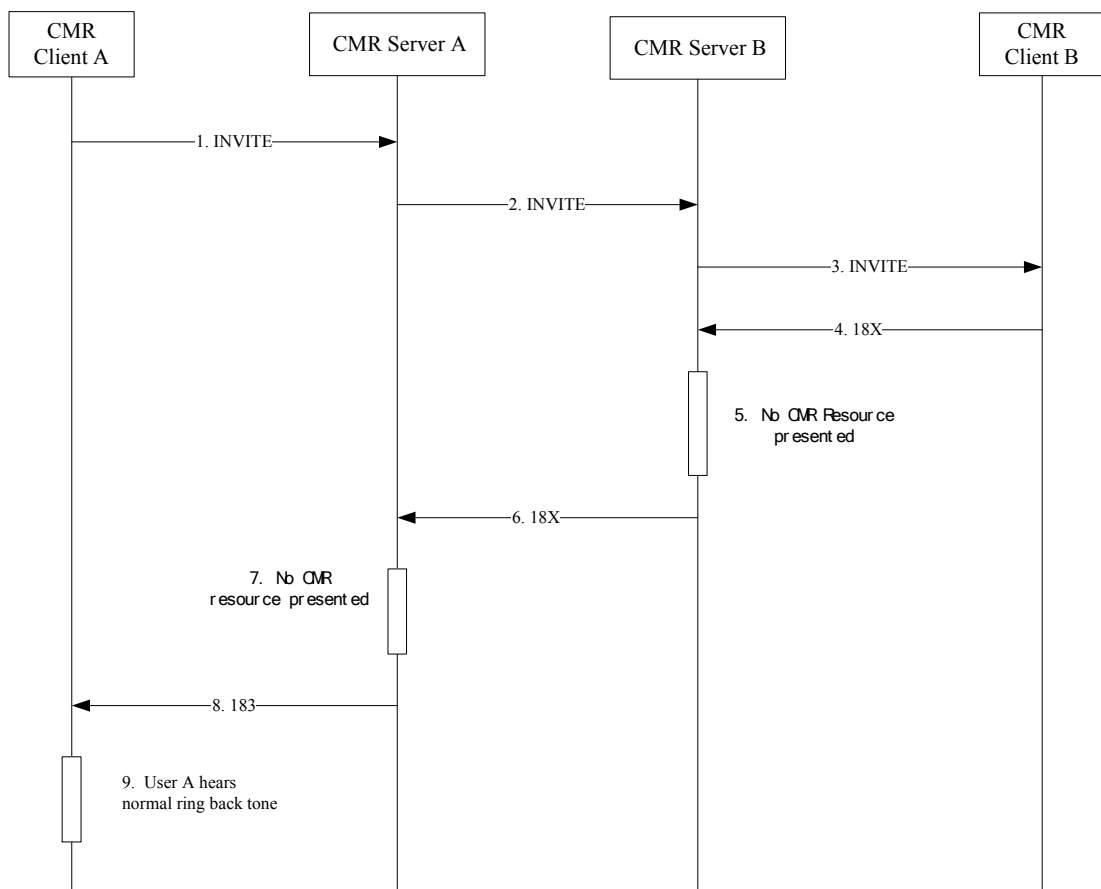
C.1.2   CMRBT Filtering in SIP/IP Core Network

Figure 2: CMRBT filtering flow

1 The CMR Client A sends a SIP INVITE request to initiate a session/call. If the filter setting has preconfigured in the CMR Client A or inserted by the CMR Subscriber A before initiating a call, the CMR Client A sets the head field Reject-Contact to "g.cmr" when generating the request message.

2 If the CMR Subscriber A pre-configured filtering on the CMR Server A or the filter indication is received, the CMR Server A SHALL insert "g.cmr" tag in the Reject-Contact header then sends the message to the CMR Server B; Otherwise the CMR Server A forwards the SIP INVITE request to the CMR Server B.

3 The CMR Server B forwards the SIP INVITE request to the CMR Client B.

4 The CMR Client B sends a SIP 18X response to the CMR Server B.

5 The CMR Server B checks that there is a tag "g.cmr" in "Reject-Contact" received in the session request message. The CMR Server B does not select and present CMR Resource according the filter indication received in step 2.

6 The CMR Server B forwards 18X response to the CMR Server A.

7 The CMR Server A does not select and present CMR Resource.

8 The CMR Server A forwards 18X response to the CMR Client A.

9 The CMR Client A plays the ring back tone locally.

Appendix D.   Filter based on MediaType   (Informative)

This section give the possible procedures about CMR Server and CMR Client when execute filter based on MediaType in the FilterSetting.

If the video media type CMR Resource is to be filtered, all the contents in the video media type CMR Resource are to be filtered.

D.1   CMRBT Procedure in SIP/IP Core Network

D.1.1   CMR Server Procedure

If filter based on MediaType in the FilterSetting is pre-configured and the called party subscribed CMRBT has priority, the CMR Server of calling party SHALL:

- send the session request message to the Remote CMR Environment.

- when receiving the SIP 18X message from the remote CMR Environment,

    - not insert the media information related to calling party's CMR Resources in the 18X message,

    - if there is early-session SDP offer with session level attribute "a=keywds:CMRBT" in the SIP 18X message, remove the received early-session SDP offer with session level attribute "a=keywds:CMRBT" whose media types are to be filtered (e.g. remove "audio" type media component when it is to be filtered) .

    - if there is SDP answer with session level attribute "a=keywds:CMRBT" in the SIP 18X message,

      modify the received SDP answer with session level attribute "a=keywds:CMRBT" to reject the SDP offer (e.g. by setting the port number of the media streams to be filtered to zero) whose media types are to be filtered

    - if there are Alert-Info/Call-Info in the SIP 18X message, remove the received URIs with the media types are to be filtered from Alert-Info/Call-Info .(If there is no URI left in the Alert-Info/Call-Info, then remove Alert-Info/Call-Info from the SIP 18X message)

- forward the 18X message to the CMR Client of calling party

- not select and present the CMR Resources of calling party

If filter based on MediaType in the FilterSetting is pre-configured and the calling party subscribed CMRBT has higher priority, the CMR Server of calling party SHALL:

- insert the tag "g.cmr" in "Reject-Contact" header in the session request message.

- send the session message to the Remote CMR Environment.

- when receiving the SIP 18X message from the remote CMR Environment, remove the early-session SDP offer with session level attribute "a=keywds:CMRBT", the SDP answer with session level attribute "a=keywds:CMRBT" and Alert-Info/Call-Info if received.

- select the CMR Resources of calling party and insert the media information of the CMR Resources whose media types are not filtered in the 18X message as normal flows defined in 7.1.1.

- send the SIP 18X message to the CMR Client of calling party.

- present the CMR Resources whose media types are not in the list of MediaType in the FilterSetting.(such as: only present video stream without audio stream if audio type CMR Resource is filtered.)

D.1.2   CMR Client Procedure

The CMR Client SHOULD check whether the CMR Resources are to be filtered based on MediaType in the FilterSetting preconfigured in the CMR Client.

When receiving the response messages to the session request the CMR Client of calling party SHOULD:

- Reject the SDP offer (e.g. by setting the port number of all the media streams to zero) in the SDP answer if there is early-session SDP offer with session level attribute "a=keywds:CMRBT" received when the media type is to be filtered according to the filter setting.

- ignore the URIs in Call-Info/Alert-Info header in the 18X message with the media types to be filtered

- how to filter the CMR Resources is not specified if there is SDP answer with session level attribute "a=keywds:CMRBT" received in the response message for gateway model.

- play the CMR Resources with allowed media types based on the filter setting when receiving 180 message

When receiving the alerting message, the CMR Client SHOULD notify the CMR End User there is an incoming call if there is no CMR Resources of audio type received.

D.2   CMRT Procedure in SIP/IP Core Network

D.2.1   CMR Server Procedure

If the CMR Resources are to be filtered based MediaType in the FilterSetting is pre-configured on the CMR Server and the calling party subscribed CMRT has higher priority, the CMR Server of called party SHALL:

- Handle the SIP request message and send it to CMR Client:

    - If there is SDP offer with session level attribute "a=keywds:CMRT" in the SIP request message, remove the filtered media type component from the SDP offer with "a=keywds:CMRT"

    - If there are Alert-Info/Call-Info in the SIP request message, remove URIs with the media types to be filtered in Alert-Info/Call-Info. (If there is no URI left in the Alert-Info/Call-Info, then remove Alert-Info/Call-Info from the SIP 18X message)

- when receiving SIP response message from the CMR Client, send the SIP response message to the Remote CMR Environment :

    - If there is SDP offer with session level attribute "a=keywds:CMRT" in the SIP request message, send the response message to the Remote CMR Environment to reject the filtered media type component (e.g. by setting the port number of the media streams to be filtered to zero) in the SDP answer.

- not select and present the CMR Resources of called party

If the CMR Resources are to be filtered based MediaType in the FilterSetting is pre-configured on the CMR Server and the called party subscribed CMRT has higher priority, the CMR Server of called party SHALL:

- remove the SDP offer with session level attribute "a=keywds:CMRT" and Alert-Info /Call-Info header if received in the SIP request message

- Insert SDP offer containing the media information of the called party's CMR Resources which media types are not in the list of the MediaType for application server model or gateway model.

- Insert the Alert-Info /Call-Info header containing the URIs of the called party's CMR Resources whose media types are not in the list of the MediaType for HTTP model.

- send the SIP request message to CMR Client.

- when receiving SIP response message from the CMR Client

    - Send the response message to the Remote CMR Environment to reject the SDP offer (e.g. by setting the port number of all the media streams to zero) in the SDP answer if there is SDP offer with session level attribute "a=keywds:CMRT" received in the SIP request message.

    - Present the CMR Resources of the called party which are not filtered.(such as: only present video stream without audio stream if audio type CMR Resource is filtered).

When receiving SIP response message, the CMR Server of calling party SHALL instruct CMR Resource Server of the calling party SHALL present the CMR Resources which media types are rejected in the SDP answer received.

D.2.2 CMR Client Procedure

The CMR Client SHOULD check whether the CMR Resources are to be filtered based on MediaType in the FilterSetting preconfigured in the CMR Client.

If the CMR Resources are to be filtered base on MediaType, the CMR Client of called party SHALL

● ignore the URIs in Call-info/Alert-info header with the media types to be filtered in the session request message , download and play CMR Resources with the allowed media types.

● if there is an SDP offer with session level attribute "a=keywds:CMRT" in the SIP message, reject the SDP offer (e.g. by setting the port number of the media streams to be filtered to zero) in the SDP answer when the media type is to be filtered according to the filter setting.

● play the CMR Resources with allowed media types based on the filter setting when receiving the session request.

When receiving the session request , the CMR Client SHOULD notify the CMR End User there is an incoming call if there is no CMR Resources of audio type received.

D.3 CMRBT Procedure in CS Core Network

When receiving the CMR service initial request (e.g. call request), the CMR Server SHALL support checking if there is a filter setting pre-configured in it.

If the CMR Resources are to be filtered based on the MediaType in the FilterSetting pre-configured, the CMR Server SHOULD check which party's CMRBT service has priority, select and present allowed (not filtered media types) CMR Resources of the call party with higher priority.