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Technical Specification

**Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
Open Service Access (OSA);
Parlay X web services;
Part 20: Multimedia multicast control
(3GPP TS 29.199-20 version 7.0.0 Release 7)**



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Foreword

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Foreword

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

3GPP acknowledges the contribution of the Parlay X Web Services specifications from The Parlay Group. The Parlay Group is pleased to see 3GPP acknowledge and publish the present document, and the Parlay Group looks forward to working with the 3GPP community to improve future versions of the present document.

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

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Introduction

The present document is part 20 of a multi-part deliverable covering the 3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Open Service Access (OSA); Parlay X Web Services, as identified below:

- Part 1: "Common"
- Part 2: "Third party call"
- Part 3: "Call Notification"
- Part 4: "Short Messaging"
- Part 5: "Multimedia Messaging"
- Part 6: "Payment"
- Part 7: "Account management"
- Part 8: "Terminal Status"
- Part 9: "Terminal location"
- Part 10: "Call handling"
- Part 11: "Audio call"
- Part 12: "Multimedia conference"
- Part 13: "Address list management"
- Part 14: "Presence"
- Part 15: "Message Broadcast"
- Part 16: "Geocoding"
- Part 17: "Application driven Quality of Service (QoS)"
- Part 18: "Device Management".
- Part 19: "Multimedia streaming control"
- Part 20: "**Multimedia multicast session management**"

1 Scope

The present document is Part 20 of the Stage 3 Parlay X Web Services specification for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e. the OSA APIs. The concepts and the functional architecture for the OSA are contained in 3GPP TS 23.198 [3]. The requirements for OSA are contained in 3GPP TS 22.127 [2].

The present document specifies the Multimedia multicast session management Web Service aspects of the interface. All aspects of the Multimedia multicast session management Web Service are defined here, these being:

- Name spaces.
- Sequence diagrams.
- Data definitions.
- Interface specification plus detailed method descriptions.
- Fault definitions.
- Service policies.
- WSDL description of the interfaces.

The present document has been defined jointly between 3GPP TSG CT WG5, ETSI TISPAN and The Parlay Group.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 22.127: "Service Requirement for the Open Services Access (OSA); Stage 1".
- [3] 3GPP TS 23.198: "Open Service Access (OSA); Stage 2".
- [4] 3GPP TS 22.101: "Service aspects; Service principles".
- [5] W3C Recommendation (2 May 2001): "XML Schema Part 2: Datatypes".

NOTE: Available at <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>.

- [6] 3GPP TS 29.199-1: "Open Service Access (OSA); Parlay X web services; Part 1: Common".
- [7] 3GPP TS 29.199-19: "Open Service Access (OSA); Parlay X web services; Part 19: Multimedia streaming control".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and in 3GPP TS 29.199-1 [6] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

Multicast joining: The process by which a user joins a multicast group.

Multicast session: The group for providing the same multicast service. The end user joins the multicast session to become the member of the multicast session.

Multicast service: A unidirectional point-to-multipoint service in which data is efficiently transmitted from a single source to a multicast group in the associated multicast service area. Multicast services can only be received by such members that are subscribed to the specific multicast service and have joined the multicast group associated with the specific service.

Member: The user becomes a member of a multicast group after he/she joined to the multicast group.

Channel presence information: Consists of a set of attributes that characterize a multicast session such as user identifiers and the multicast session in which they are participating.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 29.199-1 [6] apply.

BM-SC	Broadcast Multicast Service Centre
GGSN	Gateway GPRS Support Node
IPTV	Internet Protocol Television
MBMS	Multimedia Broadcast/Multicast Service
SGSN	Serving GPRS Support Node

4 Detailed service description

The Multimedia multicast session management Web Service allows for a third party (e.g. application) to control a multicast session, its members and multimedia stream, and obtain channel presence information.

The Multimedia multicast session management is a simple Web Service consisting of three interfaces:

- **Multicast:** the management of sessions and user participation in sessions
- **Multicast Notification:** delivering channel presence information events to the application, as users join or leave multicast sessions
- **Multicast Notification Manager:** providing on-line set up and tear down of notifications for channel presence information events

NOTE: For control of a multimedia stream associated with a multicast session (e.g. start/stop/pause/resume), a third party (e.g. application) invokes the appropriate operations defined in 3GPP TS 29.199-19 [7].

The GPRS Packet network or IP Multicast Network delivers multimedia multicast streams from a multimedia source to users who are already participating in multicast sessions. The basic scenario is as follows:

An application creates a multicast session for personal broadcasting and plays the multicast stream. A unique identifier (i.e. multicast address) is assigned to the just-created multicast session. The user participating in the multicast session for personal broadcasting may wish to invite their friends to participate in the session. If the invited friends accept this invitation request, they see the same program for personal broadcasting on their terminals. They usually communicate with each other by using a multimedia over IP while they are participating in the same session. Furthermore the application monitors user participation status (i.e. joining or leaving the multicast session) using a notification mechanism. For example, if a friend has left the session, the application is notified.

5 Namespaces

The Multicast interface uses the namespace:

http://www.csapi.org/wsd/parlayx/multicast/v3_0

The MulticastNotificationManager interface uses the namespace:

http://www.csapi.org/wsd/parlayx/multicast/notification_manager/v3_0

The MulticastNotification interface uses the namespace:

http://www.csapi.org/wsd/parlayx/multicast/notification/v3_0

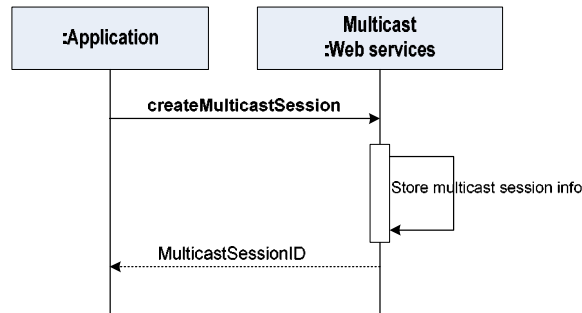
The data types are defined in the namespace:

http://www.csapi.org/schema/parlayx/multicast/v3_0

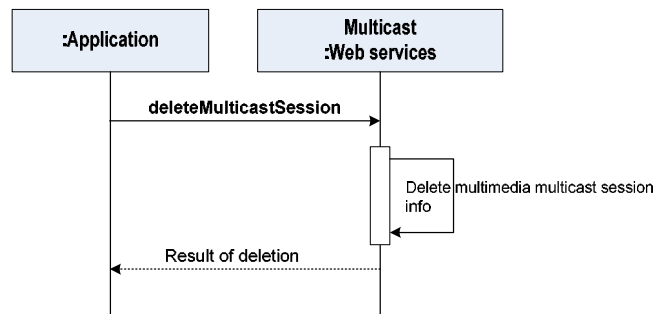
The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [5]. The use of the name 'xsd' is not semantically significant.

6 Sequence diagrams

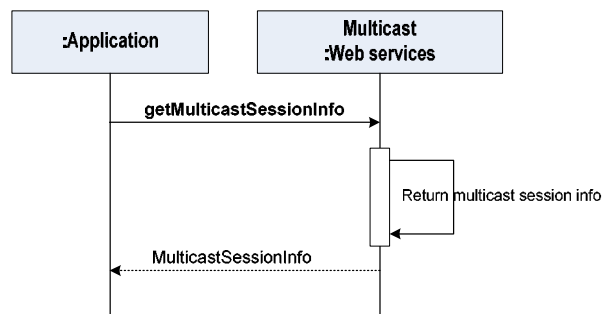
6.1 Create Multicast Session



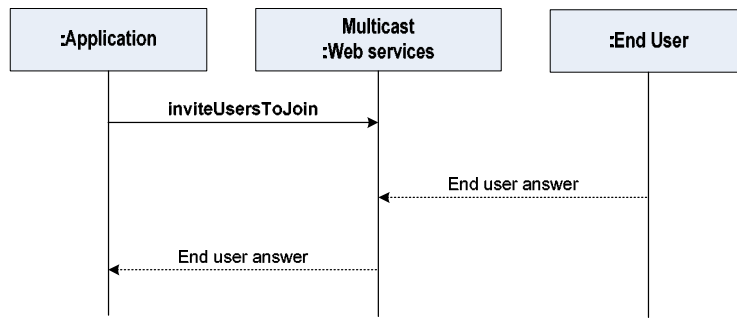
6.2 Delete Multicast Session



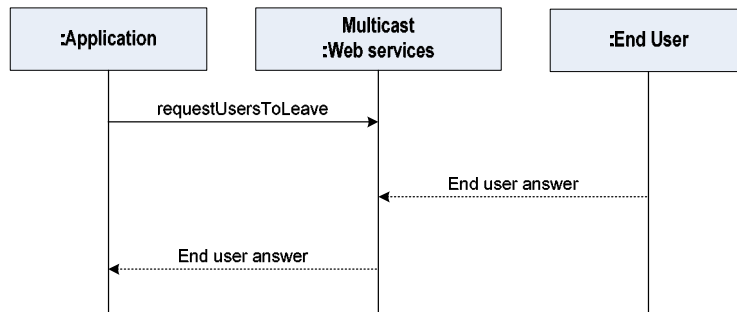
6.3 Retrieve Multicast Session Information



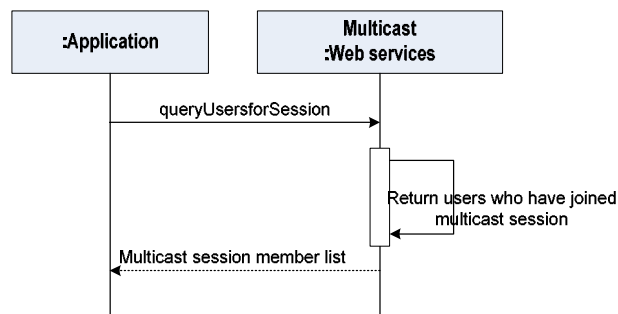
6.4 Invite Users To Join Session



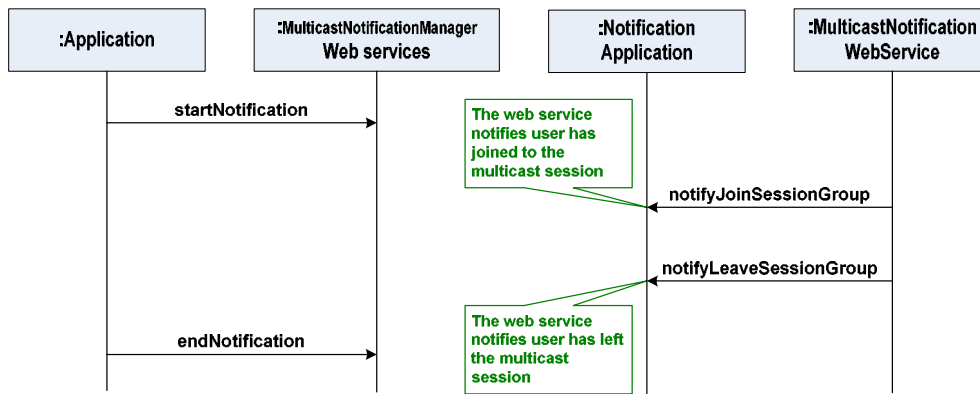
6.5 Request Users To Leave Session



6.6 Retrieve Session Participation Information



6.7 Notification of Channel Presence Information Events



7 XML Schema data type definition

7.1 SessionInformation structure

Data type for describing multicast session information

Element Name	Element Type	Optional	Description
sessionName	xsd:string	No	Multicast session name
charging	common:ChargingInformation	Yes	If present, defines the charge on multicast session.
bandwidth	xsd:string	Yes	Minimum bandwidth needed for receiving multimedia stream on the multicast session.
multimediaType	MultimediaType	Yes	Media type
sessionDuration	common:TimeMetric	Yes	Length of the multicast session exists
sessionDescription	xsd:string	Yes	Multicast session description

7.2 UserInformation structure

Element Name	Element Type	Optional	Description
user	xsd:anyURI	No	Identifies an end user
status	UserStatus	No	the status of the user

7.3 MultimediaType enumeration

Enumeration	Description
Video	Video media type
Audio	Audio media type
Data	Data media type

7.4 UserStatus enumeration

Enumeration	Description
InvitedToJoin	User invited but has not joined the session yet
Joined	User has joined the session
Rejected	User has rejected the invitation
RequestedToLeave	User requested to leave, but has not left the session yet
NotParticipating	User is not, or is no longer, participating in the session

8 Web Service interface definition

8.1 Interface: Multicast

This interface is used by the application to manage:

- multicast sessions
- user participation in sessions

8.1.1 Operation: createMulticastSession

The application invokes this operation to create a multicast session using the information it provides. If successful, the application receives the session address (i.e. the IP address) of a newly created session.

8.1.1.1 Input message: createMulticastSessionRequest

Part Name	Part Type	Optional	Description
sessionInformation	SessionInformation	No	Multicast session information

8.1.1.2 Output message: createMulticastSessionResponse

Part Name	Part Type	Optional	Description
result	xsd:string	No	Multicast session address: i.e. the IP address.

8.1.1.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.

8.1.2 Operation: deleteMulticastSession

The application invokes this operation to delete an existing multicast session.

8.1.2.1 Input message: deleteMulticastSessionRequest

Part Name	Part Type	Optional	Description
sessionAddress	xsd:string	No	Multicast Session Address, i.e. the IP address

8.1.2.2 Output message: deleteMulticastSessionResponse

Part Name	Part Type	Optional	Description
None			

8.1.2.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.

8.1.3 Operation: getMulticastSessionInformation

The application invokes this operation to retrieve information for an existing multicast session.

8.1.3.1 Input message: getMulticastSessionInformationRequest

Part Name	Part Type	Optional	Description
sessionAddress	xsd:string	No	Multicast Session Address, i.e. the IP address

8.1.3.2 Output message: getMulticastSessionInformationResponse

Part Name	Part Type	Optional	Description
result	SessionInformation	No	Multicast session information

8.1.3.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.

8.1.4 Operation: inviteUsersToJoin

The application invokes this operation to invite users to join an existing multicast session.

8.1.4.1 Input message: inviteUsersToJoinRequest

Part Name	Part Type	Optional	Description
sessionAddress	xsd:string	No	Multicast Session Address, i.e. the IP address
users	xsd:anyURI [1...unbounded]	No	The User(s) or user group(s) that are invited to join the multicast session.

8.1.4.2 Output message: inviteUsersToJoinResponse

Part Name	Part Type	Optional	Description
result	UserInformation [1...unbounded]	No	The participation status of the user(s) who were invited to join the multicast session.

8.1.4.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.
- POL0006 – Groups not allowed
- POL0007 – Nested groups not allowed

8.1.5 Operation: requestUsersToLeave

The application invokes this operation to request users to leave an existing multicast session.

8.1.5.1 Input message: requestUsersToLeaveRequest

Part Name	Part Type	Optional	Description
sessionAddress	xsd:string	No	Multicast Session Address, i.e. the IP address
users	xsd:anyURI [1...unbounded]	No	The User(s) or user group(s) that are requested to leave the multicast session.

8.1.5.2 Output message: requestUsersToLeaveResponse

Part Name	Part Type	Optional	Description
result	UserInformation [1...unbounded]	No	The participation status of the user(s) who were requested to leave the multicast session.

8.1.5.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.
- POL0006 – Groups not allowed
- POL0007 – Nested groups not allowed

8.1.6 Operation: querySessionParticipants

The application invokes this operation to request the set of users who are currently participating in an existing multicast session.

8.1.6.1 Input message: querySessionParticipantsRequest

Part Name	Part Type	Optional	Description
sessionAddress	xsd:string	No	Multicast Session Address, i.e. the IP address

8.1.6.2 Output message: querySessionParticipantsResponse

Part Name	Part Type	Optional	Description
result	xsd:anyURI [0...unbounded]	Yes	The users, if any, that are participating in the specified session i.e. with a UserStatus value of Joined or Requested ToLeave .

8.1.6.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.

8.1.7 Operation: querySessionForUser

The application invokes this operation to request the address of the multicast session in which the specified user is currently participating.

8.1.7.1 Input message: querySessionForUserRequest

Part Name	Part Type	Optional	Description
user	xsd:anyURI	No	The user participating in a multicast session.

8.1.7.2 Output message: querySessionForUserResponse

Part Name	Part Type	Optional	Description
result	xsd:string	Yes	The (IP) address of the Multicast Session, if any, in which the specified user is participating: i.e. with a UserStatus value of Joined or Requested ToLeave

8.1.7.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.

8.2 Interface: MulticastNotificationManager

8.2.1 Operation: startNotification

The notification pattern with correlation is used in order to correlate the notification events with the request.

The application sets a notification trigger on changes associated with the specified user(s) participation in a multicast session. If the specified user address is a group address, the application will receive an individual notification for each member of the group whose session participation changes.

Note that the **SimpleReference** structure contains the **correlator** string used in subsequence messages to the **MulticastNotification** interface.

8.2.1.1 Input message: startNotificationRequest

Part Name	Part Type	Optional	Description
sessionAddress	xsd:string	No	Multicast Session Address, i.e. the IP address
users	xsd:anyURI [1...unbounded]	No	The user(s) or group(s) that the application wants to monitor for joining or leaving events
reference	common: SimpleReference	No	Defines the MulticastNotification interface
frequency	common: TimeMetric	No	Maximum frequency of notifications (can also be considered minimum time between notifications)
duration	common: TimeMetric	Yes	Length of time notifications occur for; do not specify to use default notification time defined by service policy
count	xsd:int	Yes	Maximum number of notifications. For no maximum, either do not specify this part or specify a value of zero.

8.2.1.2 Output message: startNotificationResponse

Part Name	Part Type	Optional	Description
None			

8.2.1.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.
- SVC0004 - No valid addresses.
- SVC0005 - Duplicate correlator.
- SVC0006 - Invalid group.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.
- POL0003 – Too many addresses.
- POL0004 - Unlimited notifications not supported.
- POL0005 - Too many notifications requested.
- POL0006 – Groups not allowed
- POL0007 – Nested groups not allowed.

- POL0009 – Invalid frequency requested.

8.2.2 Operation: endNotification

The application may end a notification using this operation.

Until this operation returns, notifications may continue to be received by the application.

An end of notification (**notifyEndRequest**) message will not be delivered to the application for a notification ended using this operation.

8.2.2.1 Input message: endNotificationRequest

Part Name	Part Type	Optional	Description
correlator	xsd:string	No	The notification the application wants to end.

8.2.2.2 Output message: endNotificationResponse

Part Name	Part Type	Optional	Description
None			

8.2.2.3 Referenced Faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001 - Service error.
- SVC0002 - Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001 - Policy error.

8.3 Interface: MulticastNotification

Notification interface to which notifications relating to changes in channel presence information are delivered.

8.3.1 Operation: notifyJoinMulticastSession

This asynchronous operation is invoked to notify the application that the end user has joined the multicast session.

8.3.1.1 Input message: notifyJoinMulticastSessionRequest

Part Name	Part Type	Optional	Description
correlator	xsd:string	No	Identifies the notification request
user	xsd:anyURI	No	The User who has joined the multicast session.

8.3.1.2 Output message: notifyJoinMulticastSessionResponse

Part Name	Part Type	Optional	Description
None			

8.3.1.3 Referenced Faults

None

8.3.2 Operation: notifyLeaveMulticastSession

This asynchronous operation is invoked to notify the application that the end user has left the multicast session.

8.3.2.1 Input message: notifyLeaveMulticastSessionRequest

Part Name	Part Type	Optional	Description
correlator	xsd:string	No	Identifies the notification request
user	xsd:anyURI	No	The User who has left the multicast session.

8.3.2.2 Output message: notifyLeaveMulticastSessionResponse

Part Name	Part Type	Optional	Description
None			

8.3.2.3 Referenced Faults

None

8.3.3 Operation: notifyError

The error message is sent to the application to indicate that the notification for a user, or for the whole notification, is being cancelled by the Web Service.

8.3.3.1 Input message: notifyErrorRequest

Part name	Part type	Optional	Description
correlator	xsd:string	No	Correlator provided in request to set up this notification.
user	xsd:anyURI	Yes	The user to which the error applies. If not specified the error applies to all users associated with this notification.
reason	common:ServiceError	No	The reason the notification is being discontinued.

8.3.3.2 Output message: notifyErrorResponse

Part name	Part type	Optional	Description
None			

8.3.3.3 Referenced faults

None.

8.3.4 Operation: notifyEnd

The notifications have ended for this **correlator**. This operation will be invoked when the duration or count of notifications has been attained. This operation will not be invoked in the case of an error ending the notifications or deliberate ending of the notification (using **endNotification**).

8.3.4.1 Input message: notifyEndRequest

Part Name	Part Type	Optional	Description
correlator	xsd:string	No	Identifies the notification request

8.3.4.2 Output message: notifyEndResponse

Part Name	Part Type	Optional	Description
None			

8.3.4.3 Referenced Faults

None

9 Fault definitions

There are no service-specific fault definitions for this service.

10 Service policies

Name	Type	Description
MaximumNotificationAddresses	xsd:int	Maximum number of addresses for which a notification can be set up
MaximumNotificationFrequency	common:TimeMetric	Maximum rate of notification delivery (also can be considered minimum time between notifications)
MaximumNotificationDuration	common:TimeMetric	Maximum amount of time a notification may be set up for
MaximumCount	xsd:int	Maximum number of notifications that may be requested
UnlimitedCountAllowed	xsd:boolean	Allowed to specify unlimited notification count (i.e. either by not specifying the optional Count message part in startNotificationRequest or by specifying a value of zero)
GroupSupport	xsd:boolean	Groups URIs may be used
NestedGroupSupport	xsd:boolean	Are nested groups supported in group definitions

Annex A (normative): WSDL for Multimedia multicast session management

The document/literal WSDL representation of this interface specification is compliant to 3GPP TS 29.199-1 [6] and is contained in text files (contained in archive 29199-20-700-doclit.zip) which accompanies the present document.

Annex B (informative): Bibliography

3GPP TS 22.146: "Multimedia Broadcast/Multicast Service (MBMS), Stage 1".

http://www.3gpp.org/ftp/Specs/archive/22_series/22.146/22146-710.zip.

3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS), Architecture and functional description".

http://www.3gpp.org/ftp/Specs/archive/23_series/23.246/23246-690.zip.

IETF RFC 2236 Internet Group Management Protocol (IGMP), Version 2

<http://www.ietf.org/rfc/rfc2236.txt>

Annex C (informative): Description of Parlay X Web Services Part 20: Multimedia multicast session management for 3GPP2 cdma2000 networks

This annex is intended to define the OSA Parlay X Web Services Stage 3 interface definitions and it provides the complete OSA specifications. It is an extension of OSA Parlay X Web Services specifications capabilities to enable operation in cdma2000 systems environment. They are in alignment with 3GPP2 Stage 1 requirements and Stage 2 architecture defined in:

- [1] 3GPP2 X.S0011-D: "cdma2000 Wireless IP Network Standard ", Version 1.1
- [2] 3GPP2 S.R0037-0: "IP Network Architecture Model for cdma2000 Spread Spectrum Systems", Version 3.0
- [3] 3GPP2 X.S0013-A: "All-IP Core Network Multimedia Domain"

These requirements are expressed as additions to and/or exclusions from the 3GPP Release 7 specification. The information given here is to be used by developers in 3GPP2 cdma2000 network architecture to interpret the 3GPP OSA specifications.

C.1 General Exceptions

The terms 3GPP and UMTS are not applicable for the cdma2000 family of standards. Nevertheless these terms are used (3GPP TR 21.905) mostly in the broader sense of "3G Wireless System". If not stated otherwise there are no additions or exclusions required.

CAMEL mappings are not applicable for cdma2000 systems.

C.2 Specific Exceptions

C.2.1 Clause 1: Scope

There are no additions or exclusions.

C.2.2 Clause 2: References

There are no additions or exclusions.

C.2.3 Clause 3: Definitions and abbreviations

There are no additions or exclusions.

C.2.4 Clause 4: Detailed service description

There are no additions or exclusions.

C.2.5 Clause 5: Namespaces

There are no additions or exclusions.

C.2.6 Clause 6: Sequence diagrams

There are no additions or exclusions.

C.2.7 Clause 7: XML Schema data type definition

There are no additions or exclusions.

C.2.8 Clause 8: Web Service interface definition

There are no additions or exclusions.

C.2.9 Clause 9: Fault definitions

There are no additions or exclusions.

C.2.10 Clause 10: Service policies

There are no additions or exclusions.

C.2.11 Annex A (normative): WSDL for Multimedia multicast session management

There are no additions or exclusions.

Annex D (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
Nov 2006	CT_34	CP-060614	--	--	Submitted to TSG CT#34 for Information.	--	1.0.0	
Mar 2007	CT_35	CP-070054	--	--	Submitted to TSG CT#35 for Approval	--	2.0.0	7.0.0

History

Document history		
V7.0.0	March 2007	Publication