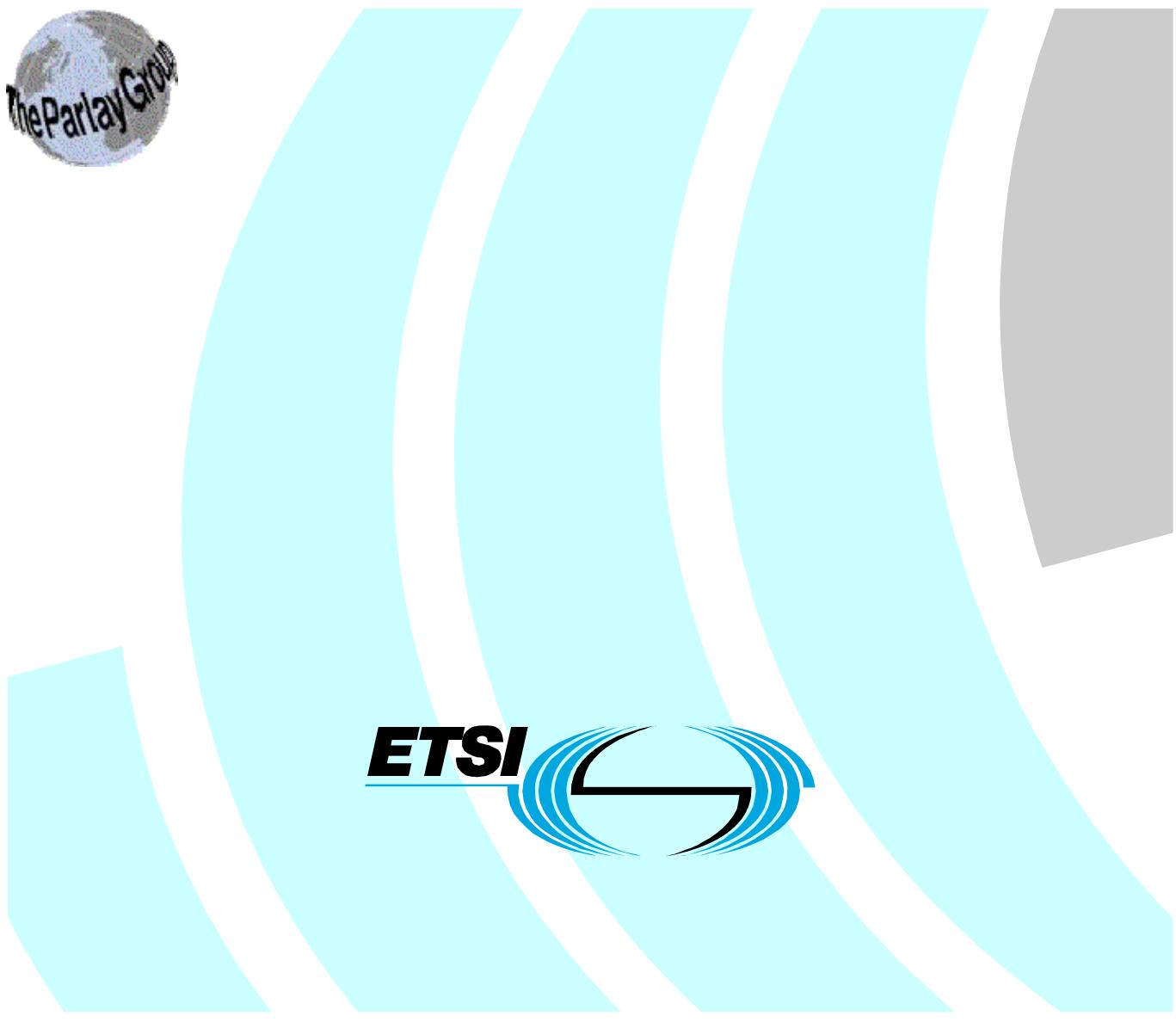Final draft **ETSI ES 202 504-20** V1.1.1 (2008-02)

Open Service Access (OSA);
Parlay X Web Services;
Part 20: Multimedia Multicast Session Management
(Parlay X 3)

Reference

DES/TISPAN-01034-20-OSA

Keywords

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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN), and is now submitted for the ETSI standards Membership Approval Procedure.

The present document is part 20 of a multi-part deliverable covering Open Service Access (OSA); Parlay X 3 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 Capabilities and Configuration";

Part 19:   "Multimedia Streaming Control";

Part 20:   "Multimedia Multicast Session Management".

The present document has been defined jointly between ETSI, The Parlay Group (http://www.parlay.org) and the 3GPP.

The present document forms part of the Parlay X 3.0 set of specifications.

The present document is equivalent to 3GPP TS 29.199-20 V7.0.2 (Release 7).

1   Scope

The present document is part 20 of the Stage 3 Parlay X 3 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 present document specifies the Multimedia Multicast Session Management Web Service. The following are defined here:

- Name spaces.

- Sequence diagrams.

- Data definitions.

- Interface specification plus detailed method descriptions.

- Fault definitions.

- Service Policies.

- WSDL Description of the interfaces.

2   References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:

  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;

  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1   Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1]   W3C Recommendation (2 May 2001): "XML Schema Part 2: Datatypes".

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

ETSI

[2]   ETSI ES 202 504-1: "Open Service Access (OSA); Parlay X Web Services; Part 1: Common (Parlay X 3)".

[3]   ETSI ES 202 504-19: "Open Service Access (OSA); Parlay X Web Services; Part 19: Multimedia Streaming Control (Parlay X 3)".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the terms and definitions given in ES 202 504-1 [2] and the following apply:

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 ES 202 504-1 [2] and the following 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 ES 202 504-19 [3].

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/wsdl/parlayx/multicast/ v3_0

The MulticastNotificationManager interface uses the namespace:

> http://www.csapi.org/wsdl/parlayx/multicast/notification_manager/v3_0

The MulticastNotification interface uses the namespace:

> http://www.csapi.org/wsdl/parlayx/multicast/notification/v3_0
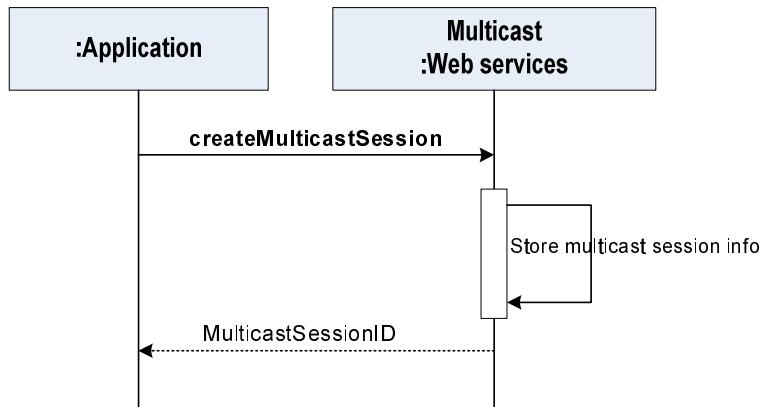
The data types are defined in the namespace:

> http://www.csapi.org/schema/parlayx/multicast/v3_0
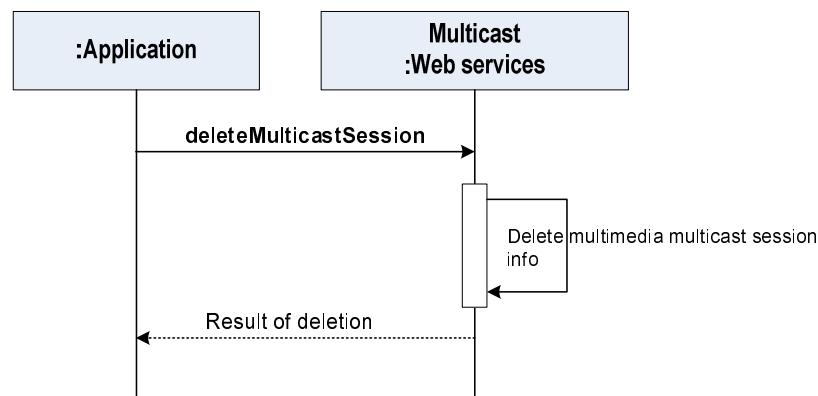
The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [1]. The use of the name 'xsd' is not semantically significant.

6   Sequence diagrams
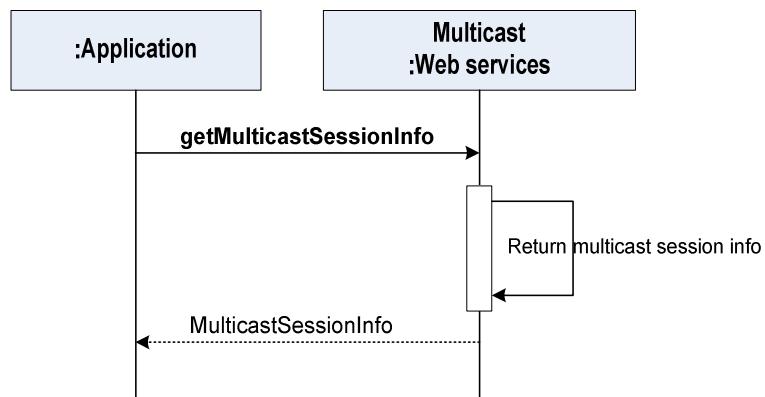
6.1   Create Multicast Session
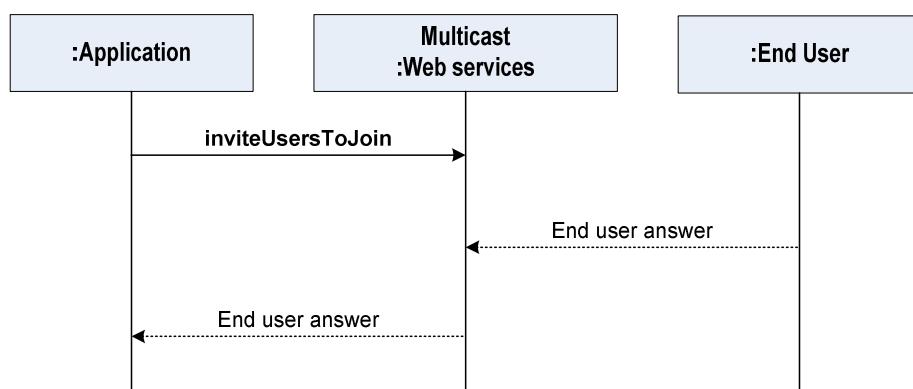
6.2   Delete Multicast Session
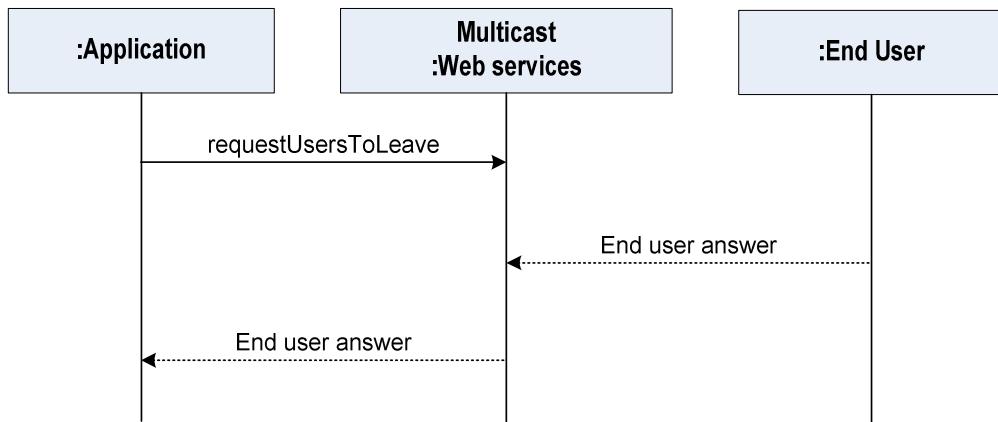
6.3   Retrieve Multicast Session Information
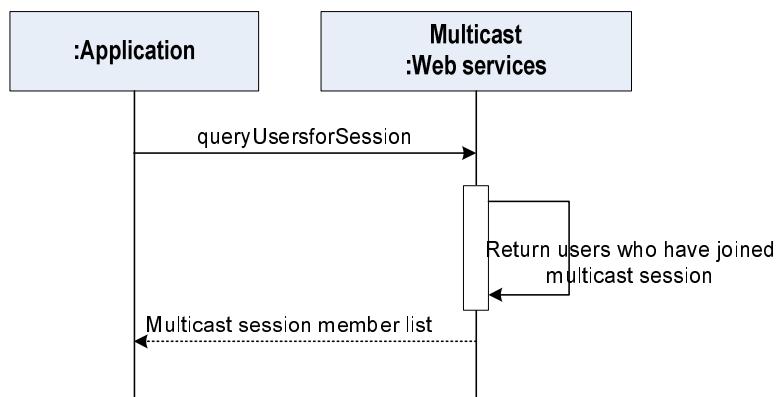
6.4   Invite Users To Join Session
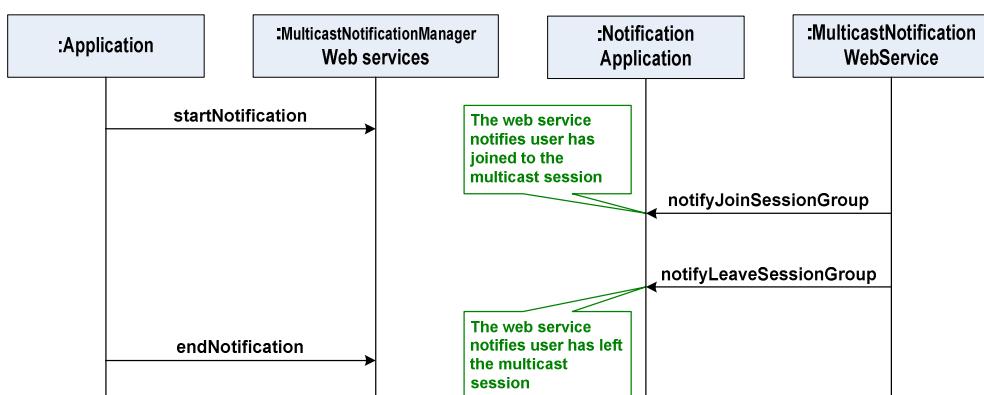
6.5 Request Users To Leave Session

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 value	Description
Video	Video media type
Audio	Audio media type
Data	Data media type

7.3   UserStatus enumeration

Enumeration value	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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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 subsequent 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

- SVC0004: No valid addresses.

- SVC0005: Duplicate correlator.

- SVC0006: Invalid group.

PolicyException from ES 202 504-1 [2]:

- 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 ES 202 504-1 [2]:

- SVC0001: Service error.

- SVC0002: Invalid input value.

PolicyException from ES 202 504-1 [2]:

- 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

Service policies for this service.

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 ES 202 504-1 [2] and is contained in text files (contained in archive es_20250420v010101m0.zip) which accompany the present document.

Annex B (informative):
Bibliography

ETSI TR 121 905: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications (3GPP TR 21.905)".

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

History

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