RESTful Network API for Third Party Call

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Open Mobile Alliance

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Contents

Figures

Tables

1. Scope

This specification defines a RESTful API for Third Party Call using HTTP protocol bindings, based on the similar API defined in [3GPP 29.199-02].

2. References

2.1 Normative References

[3GPP 29.199-02] 3GPP Technical Specification, "Open Service Access (OSA); Parlay X Web Services; Part 2: Third Party Call (Release 8)", URL:http://www.3gpp.org/

[Autho4API_10] "Authorization Framework for Network APIs", Open Mobile Alliance™, OMA-ER-Autho4API-V1_0, URL: http://www.openmobilealliance.org/

[IETF_ACR_draft] "The acr URI for anonymous users", S.Jakobsson, K.Smith, July 2011, URL: http://tools.ietf.org/html/draft-uri-acr-extension-03

[REST_NetAPI_Common] "Common definitions for OMA RESTful Network APIs", Open Mobile Alliance™, OMA-TS-REST_NetAPI_Common-V1_0, URL:http://www.openmobilealliance.org/

[REST_SUP_3PC] "XML schema for the RESTful Network API for Third Party Call", Open Mobile Alliance™, OMA-SUP-XSD_rest_netapi_thirdpartycall-V1_0, URL:http://www.openmobilealliance.org/

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt

[RFC2616] "Hypertext Transfer Protocol -- HTTP/1.1", R. Fielding et. al, January 1999, URL:http://www.ietf.org/rfc/rfc2616.txt

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[RFC3966] "The tel URI for Telephone Numbers", H. Schulzrinne, December 2004, URL: http://www.ietf.org/rfc/rfc3966.txt

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[RFC4627] "The application/json Media Type for JavaScript Object Notation (JSON)", D. Crockford, July 2006, URL: http://www.ietf.org/rfc/rfc4627.txt

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[XMLSchema1] W3C Recommendation, XML Schema Part 1: Structures Second Edition, URL: http://www.w3.org/TR/xmlschema-1/

[XMLSchema2] W3C Recommendation, XML Schema Part 2: Datatypes Second Edition, URL: http://www.w3.org/TR/xmlschema-2/

2.2 Informative References

[OMADICT] "Dictionary for OMA Specifications", Version 2.8, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_8, URL: http://www.openmobilealliance.org/

[ParlayREST_3PC] "RESTful bindings for Parlay X Web Services – Third Party Call", Version 1.0, Open Mobile Alliance™, OMA-TS-ParlayREST-ThirdPartyCall-V1_0, URL: http://www.openmobilealliance.org/

[REST_NetAPI_AudioCall] "RESTful Network API for Audio Call", Open Mobile Alliance™, OMA-TS-REST_NetAPI_AudioCall-V1_0, URL: http://www.openmobilealliance.org/

[REST_NetAPI_CallNotif] "RESTful Network API for Call Notification", Open Mobile Alliance™, OMA-TS-REST_NetAPI_CallNotification-V1_0, URL: http://www.openmobilealliance.org/

[REST_WP] "Guidelines for RESTful Network APIs", Open Mobile Alliance™, OMA-WP-Guidelines_for_RESTful_APIs, URL: http://www.openmobilealliance.org/

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.

3.2 Definitions

Client-side Notification URL	An HTTP URL exposed by a client, on which it is capable of receiving notifications and that can be used by the client when subscribing to notifications.
Long Polling	A variation of the traditional polling technique, where the server does not reply to a request unless a particular event, status or timeout has occurred. Once the server has sent a response, it closes the connection, and typically the client immediately sends a new request. This allows the emulation of an information push from a server to a client.
Notification Channel	A channel created on the request of the client and used to deliver notifications from a server to a client. It is represented as a resource and provides means for the server to post notifications and for the client to receive them via specified delivery mechanisms. For example in the case of Long Polling the channel resource is defined by a pair of URLs. One of the URLs is used by the client as a call-back URL when subscribing for notifications. The other URL is used by the client to retrieve notifications from the Notification Server.
Notification Server	A server that is capable of creating and maintaining Notification Channels.
Server-side Notification URL	An HTTP URL exposed by a Notification Server, that identifies a Notification Channel and that can be used by a client when subscribing to notifications.

Additionally, all definitions from the OMA Dictionary apply [OMADICT].

3.3 Abbreviations

ACR	Anonymous Customer Reference
API	Application Programming Interface
HTTP	HyperText Transfer Protocol
JSON	JavaScript Object Notation
MIME	Multipurpose Internet Mail Extensions
OMA	Open Mobile Alliance
REST	REpresentational State Transfer
SCR	Static Conformance Requirements
SIP	Session Initiation Protocol
TS	Technical Specification
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
XML	eXtensible Markup Language
XSD	XML Schema Definition

4. Introduction

The Technical Specification of the RESTful Network API for Third Party Call contains HTTP protocol bindings based on the Parlay X Third Party Call Web Services [3GPP 29.199-02] specification, using the REST architectural style. The specification provides resource definitions, the HTTP verbs applicable for each of these resources, and the element data structures, as well as support material including flow diagrams and examples using the various supported message body formats (i.e. XML, JSON, and application/x-www-form-urlencoded).

4.1 Version 1.0

The RESTful Network API for Third Party Call V1.0 is a republication of the ParlayREST ThirdPartyCall API V 1.0 [ParlayREST_3PC] as part of the suite of OMA RESTful Network APIs. Bug fixes and structural changes to fit that suite, but also functional changes have been applied.

Version 1.0 of the RESTful Network API for Third Party Call keeps supporting the following operations:

- Make a call session between calling participant and a number of called participants. Compared to the Parlay X baseline, this specification adds a few optional parameters that include the option to specify announcements to be played to the participants on joining the call, and to provide an endpoint on which the Client can be notified of call events such as a participant joining or leaving the call. Also, the limitation of the maximum number of participants to two on call session creation is lifted.
- Obtain information of all call sessions.
- Obtain information of all participants of a call session.
- Obtain information of a participant in a call session.
- Obtain information of a call session.
- Add a participant into a call session.
- Transfer a participant from source call session to destination call session.
- Remove a participant from a call session.
- Terminate a call session.

The following new functionality has been introduced:

- Support for scope values used with authorization framework defined in [Autho4API_10]
- Support for Anonymous Customer Reference (ACR) as an end user identifier
- Support for “acr:Authorization” as a reserved keyword in an ACR

5. Third Party Call API definition

This section is organized to support a comprehensive understanding of the Third Party Call API design. It specifies the definition of all resources, definition of all data structures, and definitions of all operations permitted on the specified resources.

Common data types, naming conventions, fault definitions and namespaces are defined in [REST_NetAPI_Common].

The remainder of this document is structured as follows:

Section 5 starts with a table listing all the resources (and their URL) used by this API, along with the data structure and the supported HTTP verbs (section 5.1). What follows are the data structures (section 5.2). A sample of typical use cases is included in section 5.3, described as high level flow diagrams.

The remaining subsections in section 5 contain the detailed specification for each of the resources. Each such subsection defines the resource, the request URL variables that are common for all HTTP commands, the possible HTTP response codes, and the supported HTTP verbs. For each supported HTTP verb, a description of the functionality is provided, along with an example of a request and an example of a response. For each unsupported HTTP verb, the returned HTTP error status is specified, as well as what to return in the Allow header.

All examples in section 5 use XML as the format for the message body. Application/x-www-form-urlencoded examples are provided in Appendix C, while JSON examples are provided in Appendix D. Appendix B provides the Static Conformance Requirements (SCR).

Appendix E lists the Parlay X equivalent operation for each supported REST resource and method combination, where applicable.

Appendix F provides a list of all lightweight resources, where applicable.

Appendix G defines authorization aspects to control access to the resources defined in this specification.

Note: Throughout this document client and application can be used interchangeably.

5.1 Resources Summary

This section summarizes all the resources used by the RESTful Third Party Call API.

The "apiVersion" URL variable SHALL have the value "v1" to indicate that the API corresponds to this version of the specification. See [REST_NetAPI_Common] which specifies the semantics of this variable.

The figure below visualizes the resource structure defined by this specification. Note that those nodes in the resource tree which have associated HTTP methods defined in this specification are depicted by solid boxes.

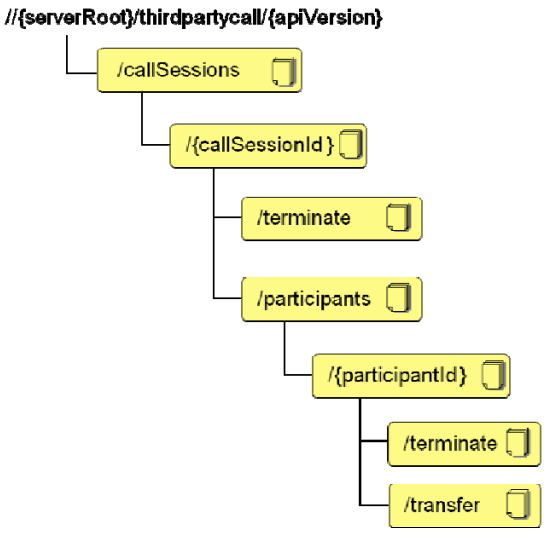

Figure 1 Resource structure defined by this specification

The following tables give a detailed overview of the resources defined in this specification, the data type of their representation and the allowed HTTP methods.

Purpose: Handling of call sessions

Resource	URL Base URL: http://{serverRoot}/thirdpartycall/{apiVersion}	Data Structures	HTTP verbs			
			GET	PUT	POST	DELETE
All Call Sessions	callSessions	CallSessionList (used for GET) CallSessionInformation (used for POST) common:ResourceReference (OPTIONAL alternative for POST response)	Get a list of all call sessions	no	Create new call session	no
Individual Call Session	callSessions/{callSessionId}	CallSessionInformation	Get information of an individual call session	no	no	Terminate call session
Call Session Termination	callSessions/{callSessionId}/terminate	TerminationParameters	no	no	Terminate call session and keep session information on server	no

Resource	URL Base URL: http://{serverRoot}/thirdpartycall/{apiVersion}	Data Structures	HTTP verbs			
			GET	PUT	POST	DELETE
All Participants of a Call Session	callSessions/{callSessionId}/participants	CallParticipantList (used for GET) CallParticipantInformation (used for POST) common:ResourceReference (OPTIONAL alternative for POST response)	Get a list of participants of a call session	no	Add participant to call session	no
Individual Call Session Participant	callSessions/{callSessionId}/participants/{participantId}	CallParticipantInformation	Get information of an individual call session participant	no	no	Remove participant from call
Call Session Participant Transfer	callSessions/{callSessionId}/participants/{participantId}/transfer	TransferParameters (used for POST request) common:ResourceReference (used for POST response)	no	no	Transfer a participant from one call session to another	no

Resource	URL Base URL: http://{serverRoot}/thirdpartycall/{apiVersion}	Data Structures	HTTP verbs			
			GET	PUT	POST	DELETE
Call Session Participant Termination	callSessions/{callSessionId}/participants/{participantId}/terminate	TerminationParameters	no	no	Remove participant from call, keep a trace of participation	no

5.2 Data Structures

5.2.1 XML Namespaces

The namespace for the Third Party Call data types is:

urn:oma:xml:rest:netapi:thirdpartycall:1

The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [XMLSchema1, XMLSchema2]. The 'common' namespace is used in the present document to refer to the data types defined in [REST_NetAPI_Common]. The use of the names 'xsd' and ‘common’ is not semantically significant.

Note that more data types related to the Third Party Call API are defined in [REST_NetAPI_Common], including CallSessionInformation and CallParticipantInformation.

The XML schema for the data structures defined in the section below is given in [REST_SUP_3PC].

Applications following the RESTful Network API for Third Party Call V 1.0 specification SHALL use the namespace urn:oma:xml:rest:netapi:thirdpartycall:1.

Note: Server implementations can choose to also support the legacy namespace urn:oma:xml:rest:thirdpartycall:1 for the Third Party Call data types, in order to allow backwards-compatibility with [ParlayREST_3PC] applications. Use of this legacy namespace is deprecated and support is foreseen to be withdrawn in future versions of this specification. In messages sent from the server to the application, the legacy namespace is suggested to be used by the server if it was used by a legacy application in the corresponding request or subscription message.

5.2.2 Structures

The subsections of this section define the data structures used in the Third Party Call API.

Some of the structures can be instantiated as so-called root elements.

For structures that contain elements which describe a user identifier, the statements in section 6 regarding 'tel', 'sip' and 'acr' URI schemes apply.

5.2.2.1 Type: CallSessionList

This type describes a list of call sessions.

Element	Type	Optional	Description
callSession	CallSessionInformation [0..unbounded]	Yes	Array of call sessions.
resourceURL	xsd:anyURI	No	Self referring URL

A root element named callSessionList of type CallSessionList is allowed in request and/or response bodies.

5.2.2.2 Type: CallSessionInformation

This type defines information about a call session.

Element	Type	Optional	Description
participant	CallParticipantInformation [1..unbounded]	No	The participants in this call. The first element in this list is considered to

			denote the “A-Party” (i.e. originator) of the call session.
participantAnnouncement	xsd:string	Yes	A reference to an announcement to be played to the participants listed in the “participant” element upon joining the call. If the “originatorAnnouncement” element is set in addition, that announcement SHALL be played to the first participant instead of this announcement. If this element is not set by the client, no announcement SHALL be played. The server SHALL understand the value “default” and play a default announcement if this value is provided as the content of this element. Further values are allowed as long as they are meaningful to the server, but these values are out of scope of this specification.
originatorAnnouncement	xsd:string	Yes	A reference to an announcement that is played to the first participant listed in the “participant” element. The first participant is viewed as the originator. This element SHALL NOT be provided if the element “participantAnnouncement” The content of the field is out of scope for this specification but is assumed to a value that is meaningful to the server.
callbackReference	common:CallbackReference	Yes	Endpoint on which to notify the client of events related to this call session, and related parameters. The client is NOT REQUIRED to set this element, but instead MAY choose to ignore, to poll for, or to use the notification framework defined in [REST_NetAPI_CallNotif] to obtain information about the call and its participants.
terminated	xsd:boolean	Yes	Indicates whether the session has been terminated (true) or is active (false). Default value is false.

charging	common:ChargingInformation	Yes	Charge to apply to the call session
mediaInfo	MediaInfo [0..unbounded]	Yes	It identifies one or more media type(s) for the call, i.e. the media type(s) to be applied to the participants in the call session. If the parameter is omitted, the media type(s) are negotiated by the underlying network.
changeMediaNotAllowed	xsd:boolean	Yes	If true, no call participant (user) in the call will be permitted to change media type during the call. If false the end user may change media type after the call is established as no network protection mechanism is set up to prevent participant (end user) initiated change of media type. Default: true
link	common:Link[0..unbounded]	Yes	Links to other resources that are in relationship with the resource
clientCorrelator	xsd:string	Yes	A correlator that the client can use to tag this particular resource representation during a request to create a resource on the server. This element MAY be present. Note: this allows the client to recover from communication failures during resource creation and therefore avoids re-creating the call session in such situations. In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the field is not present, the server SHALL NOT generate it.
resourceURL	xsd:anyURI	Yes	Self referring URL. The resourceURL SHALL NOT be included in POST requests by the client, but MUST be included in POST requests representing notifications by the server to the client, when a complete representation of the resource is embedded in the notification. The resourceURL MUST also be included in responses to any HTTP method that returns an entity body, and in PUT requests.

Note that the clientCorrelator is used for purposes of error recovery as specified in [REST_NetAPI_Common], and internal client purposes. The server is NOT REQUIRED to use the clientCorrelator value in any form in the creation of the URL of the resource. The document [REST_NetAPI_Common] provides a recommendation regarding the generation of the value of this field.

A root element named callSessionInformation of type CallSessionInformation is allowed in request and/or response bodies.

5.2.2.3 Type: CallParticipantList

This type describes a list of call participants.

Element	Type	Optional	Description
participant	CallParticipantInformation [1..unbounded]	No	Array of call participants.
resourceURL	xsd:anyURI	No	Self referring URL

A root element named callParticipantList of type CallParticipantList is allowed in request and/or response bodies.

5.2.2.4 Type: CallParticipantInformation

This type defines information about a call participant.

Element	Type	Optional	Description
participantAddress	xsd:anyURI	No	Address (e.g. 'sip' URI, 'tel' URI, 'acr' URI) of the user. Corresponds to CallIParticipantIdentifier in Parlay X.
participantName	xsd:string	Yes	The name of the participant.
participantStatus	CallParticipantStatus	Yes	Indicates the current status of the participant in the call.
startTime	xsd:dateTime	Yes	Indicates the time when the call participant was added to the call. This field SHALL be present when CallParticipantStatus <> CallParticipantInitial).
Duration	xsd:int	Yes	Indicates the duration of the call participant's involvement in the call, expressed in seconds. This field SHALL be present when CallParticipantStatus = CallParticipantTerminated.
terminationCause	CallParticipantTerminationCause	Yes	It indicates the cause of the call participants termination from the call. This field SHALL be present when CallParticipantStatus = CallParticipantTerminated.
mediaInfo	MediaInfo [0..unbounded]	Yes	When applicable, it indicates the

			media currently used in the call for the identified participant.
Link	common:Link [0..unbounded]	Yes	Links to other resources that are in relationship with the resource
clientCorrelator	xsd:string	Yes	A correlator that the client can use to tag this particular resource representation during a request to create a resource on the server. This element MAY be present. Note: this allows the client to recover from communication failures during resource creation and therefore avoids trying to re-connect an already connected participant in such situations. In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the field is not present, the server SHALL NOT generate it.
resourceURL	xsd:anyURI	Yes	Self referring URL. The resourceURL SHALL NOT be included in POST requests by the client, but MUST be included in POST requests representing notifications by the server to the client, when a complete representation of the resource is embedded in the notification. The resourceURL MUST also be included in responses to any HTTP method that returns an entity body, and in PUT requests.

Regarding the clientCorrelator field, the note in section 5.2.2.2 applies.

A root element named callParticipantInformation of type CallParticipantInformation is allowed in request and/or response bodies.

5.2.2.5 Type: MediaInfo

This type defines media information.

Element	Type	Optional	Description
Media	Media	No	type of media information
mediaDirection	MediaDirection	No	direction of media

5.2.2.6 Type: TransferParameters

This type defines the set of parameters for the call participant transfer request.

Element	Type	Optional	Description
destinationCallSession	xsd:anyURI	No	The URI of the call session to which the participant is to be transferred.

A root element named transferParameters of type TransferParameters is allowed in request bodies.

5.2.2.7 Type: TerminationParameters

This type defines the set of parameters for the call termination request.

Element	Type	Optional	Description
(empty)			In the current version of this specification, this type is empty.

A root element named terminationParameters of type TerminationParameters is allowed in request bodies.

5.2.3 Enumerations

The subsections of this section define the enumerations used in the Third Party Call API.

5.2.3.1 Enumeration: Media

This enumeration defines possible values for media.

Enumeration	Description
Audio	Audio media type
Video	Video media type
Chat	Chat media type
Data	Other media type

5.2.3.2 Enumeration: MediaDirection

This enumeration defines possible values for media direction.

Enumeration	Description
In	Incoming
Out	Outgoing
InOut	Bidirectional

5.2.3.3 Enumeration: CallParticipantStatus

List of the status values associated with a call to a participant.

Enumeration	Description
CallParticipantInitial	The call is being established to a participant
CallParticipantConnected	The participant is active in the call
CallParticipantTerminated	The call to the participant was terminated

5.2.3.4 Enumeration: CallParticipantTerminationCause

List of the termination causes associated with a call to a participant.

Enumeration	Description
CallParticipantNoAnswer	The participant did not answer the call
CallParticipantBusy	The participant was busy
CallParticipantNotReachable	The participant was not reachable
CallParticipantHangUp	The participant hung up thereby terminating the call for that party
CallParticipantAborted	The call was aborted for the participant (i.e. any other termination cause than hanging up)

5.2.4 Values of the Link "rel" attribute

The "rel" attribute of the Link element (see [REST_NetAPI_Common]) is a free string set by the server implementation, to indicate a relationship between the current resource and an external resource. The following are possible strings, indicating resources that are defined in this specification which the "link" element can point to (list is non-exhaustive, and can be extended):

- CallSessionList
- CallSessionInformation
- CallParticipantList
- CallParticipantInformation

These values indicate the kind of resource that the link points to.

5.3 Sequence Diagrams

The following sub-sections describe the resources, methods and steps involved in typical scenarios.

5.3.1 Creating and manipulating a call session

This figure below shows a scenario for creating and manipulating a call session.

The resources:

- In order to create a call session with one or more participants, create a new resource under **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions**
- In order to get information about an ongoing call session, read the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}**
- In order to add a participant to an ongoing call session, create a new resource under **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants**
- In order to get information about the participants of a call session and their status, read the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants**
- In order to get information about a particular participant of a call session, read the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}**
- In order to remove a participant from an ongoing session,
    - if it is *not* intended to access the resource representing this participant's participation in the call after the participant's removal, delete the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}**
    - if it *is* intended to access information about this participant's participation in the call session after the participant's removal, use the POST method to submit a termination request to the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}/terminate**
- In order to make a call transfer (which effectively is to transfer a participant from an ongoing session to another one), use the POST method to submit the resourceURL identifying the target session to the resource below: **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}/transfer**
- In order to terminate an ongoing call session,
    - if it is *not* intended to access the resource representing the call session after its termination, delete the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}**
    - if it *is* intended to access information about the call session after its termination, use the POST method to submit a termination requestto the resource **http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/terminate**

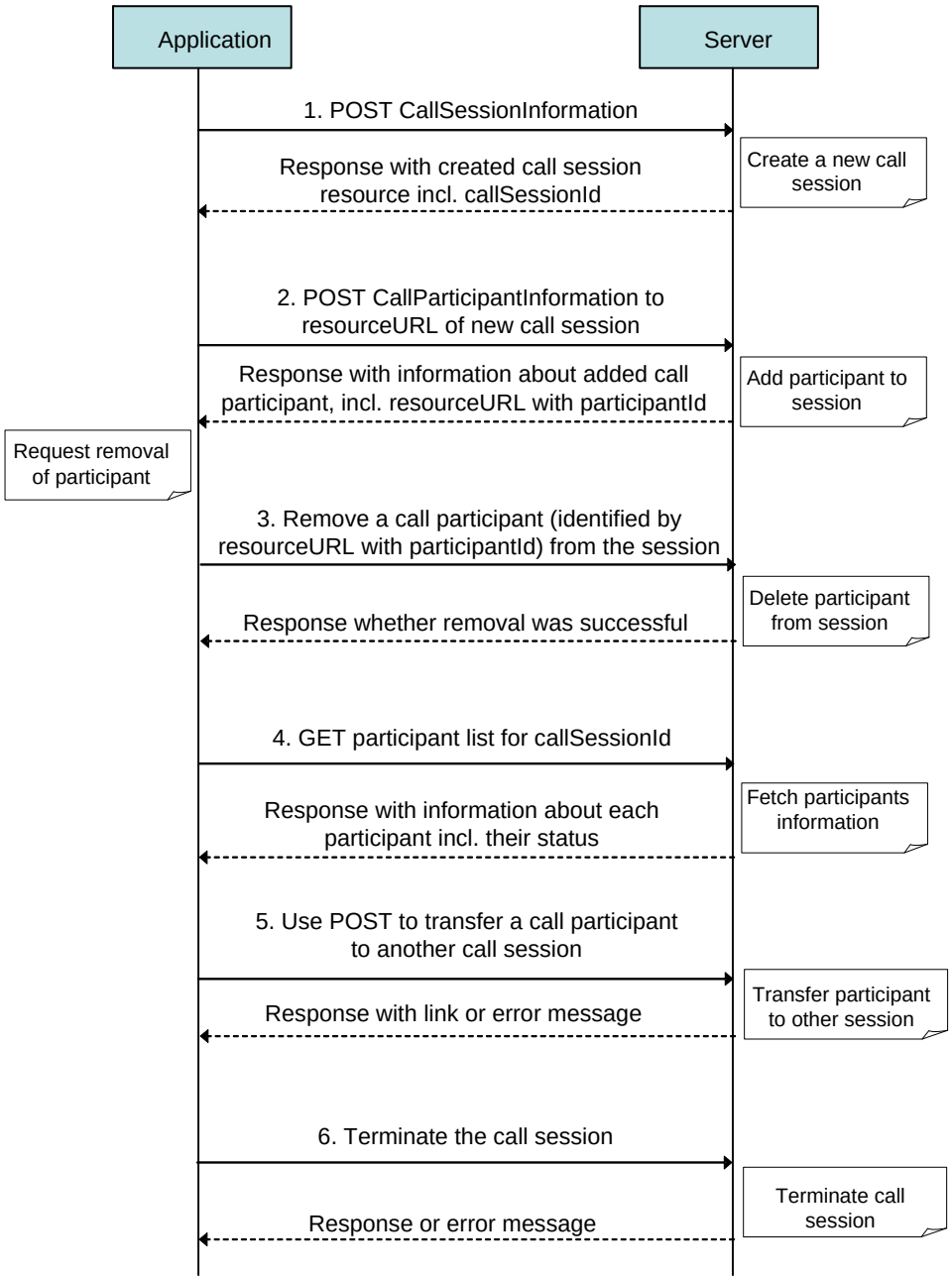

Figure 2 Creating and manipulating a call session

Outline of flow:

1. To create a new call session, the Application uses the POST method to submit a CallSessionInformation structure to the resource containing all call sessions, thereby triggering the creation of a new call session resource, and receives the resulting resourceURL containing the callSessionId.
2. To add more participants to an existing call session, the Application uses the POST method to submit a CallParticipantInformation structure to the resource containing all participants of a session, thereby triggering the addition of a new participant resource, and receives the resulting resourceURL containing the participantId.
3. To remove a participant from an existing call session, the Application can use two different methods:

a. The Application applies the DELETE method to the resource that represents the participant to be removed. This triggers the server to terminate that participant's connection to the call session, and to remove any indication that this participant has been part of the call session.

b. Alternatively, the Application uses the POST method to submit a termination request to the "terminate" child of the resource that represents the participant to be removed. This triggers the server to terminate that participant's connection to the call session, and to update its status and call duration information.

4. To receive the updated list of participants, the Application reads the resource containing all participants of the session.

5. In order to make a call transfer (which effectively is to transfer a participant from an ongoing session to another one), the Application uses the POST method to submit a resourceURL that identifies the target call session to the "transfer" child of the resourceURL which addresses the participant to be transferred within the source call session. The Server sets the status of the call participant in the source session to "CallParticipantTerminated", adds the participant to the destination session, and provides a link to the representation of the call participant in the destination call session.

6. To terminate a call session, the Application can use two different methods:

   a. The Application applies the DELETE method to the resourceURL that represents the session. In this case, the application receives a response whether the deletion was successful. Information about a call session that was deleted is no longer available

   b. Alternatively, the Application uses the POST method to submit a termination request to the "terminate" child of the resource URL that represents the call session. In this case, the server keeps information about the session for a time interval that is defined by operator policies.

Announcements and Notifications in call sessions:

Note that setting up and maintaining a call session usually involves announcements and status monitoring.

Playing an announcement to new participants and asking them for an interaction improves user experience and prevents connecting fax machines, voice boxes etc. to a call session. Monitoring the status of the call participants is either done by subscribing to notifications about events that change the status, or by periodically polling the resources representing the call session or the call participants.

The ThirdPartyCall API allows subscribing to notifications about the created call session and to request playing default announcements by supplying the according optional parameters in the CallSessionInformation. The optional notification URL passed by the client during the creation of the call session can be a Client-side Notification URL, or a Server-side Notification URL. Refer to [REST_NetAPI_NotificationChannel] for sequence flows illustrating the creation of a Notification Channel and obtaining a Server-side Notification URL on the server-side, and its use by the client via Long Polling.

Alternatively, in accordance with [3GPP 29.199-02], a plain call session can be created by omitting these parameters. In such a case, the Application can use the methods specified in [REST_TS_CallNotif] and [REST_TS_AudioCall] to realize this functionality.

6. Detailed specification of the resources

The following applies to all resources defined in this specification regardless of the representation format (i.e. XML, JSON, application/x-www-form-urlencoded):

- Reserved characters in URL variables (parts of a URL denoted below by a name in curly brackets) MUST be percent-encoded according to [RFC3986]. Note that this always applies, no matter whether the URL is used as a Request URL or inside the representation of a resource (such as in "resourceURL" and "link" elements).
- If a user identifier (e.g. address, participantAddress, etc.) of type anyURI is in the form of an MSISDN, it MUST be defined as a global number according to [RFC3966] (e.g. tel:+19585550100). The use of characters other than digits and the leading "+" sign SHOULD be avoided in order to ensure uniqueness of the resource URL. This applies regardless of whether the user identifier appears in a URL variable or in a parameter in the body of an HTTP message.
- If a user identifier (e.g. address, participantAddress, etc) of type anyURI is in the form of a SIP URI, it MUST be defined according to [RFC3261].
- If a user identifier (e.g. address, participantAddress, etc) of type anyURI is in the form of an Anonymous Customer Reference (ACR), it MUST be defined according to [IETF_ACR_draft], i.e. it MUST include the protocol prefix 'acr:' followed by the ACR.
    - The ACR 'Authorization' is a supported reserved keyword, and MUST NOT be assigned as an ACR to any particular end user. See G.1.2 for details regarding the use of this reserved keyword.
- For requests and responses that have a body, the following applies: in the requests received, the server SHALL support JSON and XML encoding of the parameters in the body, and MAY support application/x-www-form-urlencoded parameters in the body. The Server SHALL return either JSON or XML encoded parameters in the response body, according to the result of the content type negotiation as specified in [REST_NetAPI_Common]. In notifications to the Client, the server SHALL use either XML or JSON encoding, depending on which format the client has specified in the related subscription. The generation and handling of the JSON representations SHALL follow the rules for JSON encoding in HTTP Requests/Responses as specified in [REST_ NetAPI_Common].

6.1 Resource: All call sessions

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions

This resource is used as a container for all call sessions, and to set up a new call session.

In the case an optional notifyURL is passed to the server when creating a call session, this resource can be used in conjunction with a Client-side Notification URL, or in conjunction with a Server-side Notification URL. In this latter case, the application MUST first create a Notification Channel (see [REST_NetAPI_NotificationChannel]) before creating a call session.

6.1.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI

apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.1.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.1.3 GET

This operation is used for retrieving a list of all call sessions.

6.1.3.1 Example: Retrieving a list of all call sessions (Informative)

6.1.3.1.1 Request

```
GET /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Accept: application/xml
Host: example.com
```

6.1.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionList xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <callSession>
    <participant>
      <participantAddress>tel:+19585550101</participantAddress>
      <participantName>Max Muster</participantName>
      <participantStatus>CallParticipantConnected</participantStatus>
      <startTime>2010-06-28T17:50:51</startTime>
      <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001</resourceURL>
    </participant>
    <participant>
      <participantAddress>tel:+19585550102</participantAddress>
      <participantName>Peter E. Xample</participantName>
      <participantStatus>CallParticipantInitial</participantStatus>
      <startTime>2010-06-28T17:50:51</startTime>
      <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002</resourceURL>
    </participant>
    <terminated>false</terminated>
    <clientCorrelator>104567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001</resourceURL>
  </callSession>
  <callSession>
    <participant>
      <participantAddress>tel:+19585550103</participantAddress>
      <participantName>Mary E. Xample</participantName>
```

```
      <participantStatus>CallParticipantTerminated</participantStatus>
      <startTime>2010-06-28T17:50:51</startTime>
      <duration>135</duration>
      <terminationCause>CallParticipantAborted</terminationCause>
      <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001</resourceURL>
    </participant>
    <participant>
      <participantAddress>tel:+19585550104</participantAddress>
      <participantName>John E. Xample</participantName>
      <participantStatus>CallParticipantTerminated</participantStatus>
      <startTime>2010-06-28T17:51:51</startTime>
      <duration>134</duration>
      <terminationCause>CallParticipantAborted</terminationCause>
      <clientCorrelator>224567</clientCorrelator>
      <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
    </participant>
    <terminated>true</terminated>
    <clientCorrelator>204567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002</resourceURL>
  </callSession>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions</resourceURL>
</tpc:callSessionList>
```

Note the following: The clientCorrelator element is an optional field intended to be used in conjunction with resource creation by POST. Therefore, the clientCorrelator can be contained in those call participant structures which have been added to an existing session at a later time, but not in those that have been passed as part of the CallSessionInformation structure at the time the session was created.

6.1.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 14.7 of [RFC 2616].

6.1.5 POST

This operation is used for creating a new call session.

There SHALL be at least one participant at the time the session is created. The maximum number allowed is defined by operator policies, but SHALL NOT be smaller than 2. The server SHALL NOT create the call session, and SHALL return a policy error POL0240 in case the limit is exceeded.

If the client provides a "callbackReference" element, the server SHALL notify the client using that reference about events occurring in the call. The notifyURL in the optional callbackReference either contains the Client-side Notification URL (as defined by the client) or the Server-side Notification URL (as obtained during the creation of the Notification Channel [REST_NetAPI_NotificationChannel]).

It is NOT RECOMMENDED to instantiate the "clientCorrelator" sub-element of the "participant" element when creating a call session, because that information is not necessary in this case.

6.1.5.1 Example 1: Creating a "plain" call session, response with copy of created resource (Informative)

This example illustrates the creation of a call session without setting up announcements and subscribing to notifications. These latter items would need to be done using the resources provided in [REST_TS_CallNotif] and [REST_TS_AudioCall]. The response includes *a copy of the created resource*.

6.1.5.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participant>
      <participantAddress>tel:+19585550101</participantAddress>
      <participantName>Max Muster</participantName>
    </participant>
    <participant>
      <participantAddress>tel:+19585550102</participantAddress>
      <participantName>Peter E. Xample</participantName>
    </participant>
    <clientCorrelator>104567</clientCorrelator>
</tpc:callSessionInformation>
```

6.1.5.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participant>
    <participantAddress>tel:+19585550101</participantAddress>
    <participantName>Max Muster</participantName>
    <participantStatus>CallParticipantConnected</participantStatus>
    <startTime>2010-06-28T17:50:51</startTime>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001</resourceURL>
  </participant>
  <participant>
    <participantAddress>tel:+19585550102</participantAddress>
    <participantName>Peter E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002</resourceURL>
  </participant>
  <terminated>false</terminated>
  <clientCorrelator>104567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001</resourceURL>
</tpc:callSessionInformation>
```

6.1.5.2 Example 2: Creating a "plain" call session, response with location of created resource (Informative)

This example illustrates the creation of a call session without setting up announcements and subscribing to notifications. These latter items would need to be done using the resources provided in [REST_TS_CallNotif] and [REST_TS_AudioCall]. The response includes *the location of the created resource*.

6.1.5.2.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participant>
      <participantAddress>tel:+19585550101</participantAddress>
      <participantName>Max Muster</participantName>
    </participant>
    <participant>
      <participantAddress>tel:+19585550102</participantAddress>
      <participantName>Peter E. Xample</participantName>
    </participant>
    <clientCorrelator>104567</clientCorrelator>
</tpc:callSessionInformation>
```

6.1.5.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001</resourceURL>
</common:resourceReference>
```

6.1.5.3 Example 3: Creating a call session, setting up announcements and subscribing to notifications (Informative)

This example illustrates the use of the parameters for setting up announcements and subscribing to notifications related to the call session to be created. The response includes a *copy of the created resource*. Note that alternatively, the location of the created resource can be included in the response, by returning a 'resourceReference' root element, as illustrated in section 6.1.5.2.2.

6.1.5.3.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/xml
Accept: application/xml
```

```
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participant>
      <participantAddress>tel:+19585550101</participantAddress>
      <participantName>Max Muster</participantName>
    </participant>
    <participant>
      <participantAddress>tel:+19585550102</participantAddress>
      <participantName>Peter E. Xample</participantName>
    </participant>
    <participantAnnouncement>predefinedAnnouncement1ForParticipant</participantAnnouncement>
    <originatorAnnouncement>predefinedAnnouncement1ForOriginator</originatorAnnouncement>
    <callbackReference>
        <notifyURL>http://application.example.com/notifications/NotificationURL</notifyURL>
    </callbackReference>
    <clientCorrelator>304567</clientCorrelator>
</tpc:callSessionInformation>
```

6.1.5.3.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc ="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participant>
    <participantAddress>tel:+19585550101</participantAddress>
    <participantName>Max Muster</participantName>
    <participantStatus>CallParticipantConnected</participantStatus>
    <startTime>2010-06-28T17:50:51</startTime>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003/participants/pt001</resourceURL>
  </participant>
  <participant>
    <participantAddress>tel:+19585550102</participantAddress>
    <participantName>Peter E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003/participants/pt002</resourceURL>
  </participant>
  <participantAnnouncement>predefinedAnnouncement1ForParticipant</participantAnnouncement>
  <originatorAnnouncement>predefinedAnnouncement1ForOriginator</originatorAnnouncement>
  <callbackReference>
      <notifyURL>http://application.example.com/notifications/NotificationURL</notifyURL>
  </callbackReference>
  <terminated>false</terminated>
  <clientCorrelator>304567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003</resourceURL>
</tpc:callSessionInformation>
```

6.1.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 14.7 of [RFC 2616].

6.2 Resource: Individual call session

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}

This resource is used to represent a single call session.

6.2.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI
apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.
callSessionId	identifier of the call session (server-generated)

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.2.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.2.3 GET

This operation is used for retrieving the information about a call session.

6.2.3.1 Example: Retrieving call session information (Informative)

This example shows also an alternative way to indicate desired content type in response from the server, by using URL query parameter "?resFormat" which is described in [REST_NetAPI_Common].

6.2.3.1.1 Request

```
GET /exampleAPI/thirdpartycall/v1/callSessions/cs001?resFormat=XML HTTP/1.1
Host: example.com
```

6.2.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

```
<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participant>
    <participantAddress>tel:+19585550101</participantAddress>
    <participantName>Max Muster</participantName>
    <participantStatus>CallParticipantConnected</participantStatus>
    <startTime>2010-06-28T17:50:51</startTime>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001</resourceURL>
  </participant>
  <participant>
    <participantAddress>tel:+19585550102</participantAddress>
    <participantName>Peter E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002</resourceURL>
  </participant>
  <terminated>false</terminated>
  <clientCorrelator>104567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001</resourceURL>
</tpc:callSessionInformation>
```

6.2.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, DELETE' field in the response as per section 14.7 of [RFC 2616].

6.2.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, DELETE' field in the response as per section 14.7 of [RFC 2616].

6.2.6 DELETE

This operation is used for terminating a call session and removing the related information from the server. The server MUST update the status of all participants to reflect the call termination, and MUST return in the response that final status of the resource.

6.2.6.1 Example: Terminating a call session (Informative)

6.2.6.1.1 Request

```
DELETE /exampleAPI/thirdpartycall/v1/callSessions/cs002 HTTP/1.1
Accept: application/xml
Host: example.com
```

6.2.6.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

```
<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participant>
    <participantAddress>tel:+19585550103</participantAddress>
    <participantName>Mary E. Xample </participantName>
    <participantStatus>CallParticipantTerminated</participantStatus>
    <startTime>2010-06-28T17:50:51</startTime>
    <duration>135</duration>
    <terminationCause>CallParticipantAborted</terminationCause>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001</resourceURL>
  </participant>
  <participant>
    <participantAddress>tel:+19585550104</participantAddress>
    <participantName>John E. Xample</participantName>
    <participantStatus>CallParticipantTerminated</participantStatus>
    <startTime>2010-06-28T17:51:51</startTime>
    <duration>134</duration>
    <terminationCause>CallParticipantAborted</terminationCause>
    <clientCorrelator>224567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
  </participant>
  <terminated>true</terminated>
  <clientCorrelator>204567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002</resourceURL>
</tpc:callSessionInformation>
```

6.3 Resource: Call session termination

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/terminate

This resource is used to terminate a call session, keeping the session information on the server. The server deletes the information about terminated call sessions after a certain time interval, as defined by service provider policies.

6.3.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI
apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.
callSessionId	identifier of the call session (server-generated)

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.3.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.3.3 GET

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.3.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.3.5 POST

This operation is used to terminate a call session, keeping the session information on the server.

6.3.5.1 Example: Terminating a call session without removing the status information (Informative)

6.3.5.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs001/terminate HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:terminationParameters xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1"/>
```

6.3.5.1.2 Response

```
HTTP/1.1 204 No Content
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

6.3.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.4 Resource: All participants of a call session

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants

This resource is used to store information related to the participants in a call session and to add a participant to an ongoing call session.

6.4.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI
apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.
callSessionId	identifier of the call session (server-generated)

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.4.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.4.3 GET

This operation is used to read the information about all participants in a call session.

6.4.3.1 Example: Retrieving information about all call participants (Informative)

6.4.3.1.1 Request

```
GET /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Accept: application/xml
Host: example.com
```

6.4.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantList xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participant>
      <participantAddress>tel:+19585550103</participantAddress>
      <participantName>Mary E. Xample </participantName>
      <participantStatus>CallParticipantTerminated</participantStatus>
      <startTime>2010-06-28T17:50:51</startTime>
      <duration>135</duration>
      <terminationCause>CallParticipantAborted</terminationCause>
      <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001</resourceURL>
    </participant>
    <participant>
      <participantAddress>tel:+19585550104</participantAddress>
      <participantName>John E. Xample</participantName>
```

```
      <participantStatus>CallParticipantTerminated</participantStatus>
      <startTime>2010-06-28T17:51:51</startTime>
      <duration>134</duration>
      <terminationCause>CallParticipantAborted</terminationCause>
      <clientCorrelator>224567</clientCorrelator>
      <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
    </participant>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants</resourceURL>
</tpc:callParticipantList>
```

6.4.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 14.7 of [RFC 2616].

6.4.5 POST

This operation is used to add a participant to the call session.

The maximum number of active participants allowed in a call session is defined by operator policies, but SHALL NOT be smaller than 2. The server SHALL NOT add the participant, and SHALL return a policy error POL0240 "Too many participants" in case the limit is exceeded.

6.4.5.1 Example 1: Adding a participant to a call session, response with copy of created resource (Informative)

6.4.5.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participantAddress>tel:+19585550104</participantAddress>
  <participantName>John E. Xample</participantName>
  <clientCorrelator>224567</clientCorrelator>
</tpc:callParticipantInformation>
```

6.4.5.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participantAddress>tel:+19585550104</participantAddress>
```

```
    <participantName>John E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <clientCorrelator>224567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</tpc:callParticipantInformation>
```

6.4.5.2 Example 2: Adding a participant to a call session, response with location of created resource (Informative)

6.4.5.2.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participantAddress>tel:+19585550104</participantAddress>
  <participantName>John E. Xample</participantName>
  <clientCorrelator>224567</clientCorrelator>
</tpc:callParticipantInformation>
```

6.4.5.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL> http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</common:resourceReference>
```

6.4.5.3 Example 3: Adding a participant to a call session, using ACR (Informative)

6.4.5.3.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participantAddress>acr:pseudonym123</participantAddress>
  <participantName>John E. Xample</participantName>
  <clientCorrelator>224567</clientCorrelator>
```

```
</tpc:callParticipantInformation>
```

6.4.5.3.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participantAddress>acr:pseudonym123</participantAddress>
    <participantName>John E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <clientCorrelator>224567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</tpc:callParticipantInformation>
```

6.4.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 14.7 of [RFC 2616].

6.5 Resource: Individual call session participant

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}

This resource is used to manage information regarding a call participant in a call session.

6.5.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI
apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.
callSessionId	identifier of the call session (server-generated)
participantId	identifier of the call participant in the call session (server-generated)

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.5.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.5.3 GET

This operation is used to read information about a call participant.

6.5.3.1 Example: Retrieving information about a call participant (Informative)

6.5.3.1.1 Request

```
GET /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002 HTTP/1.1
Accept: application/xml
Host: example.com
```

6.5.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participantAddress>tel:+19585550104</participantAddress>
    <participantName>John E. Xample</participantName>
    <participantStatus>CallParticipantConnected</participantStatus>
    <startTime>2010-06-28T17:51:51</startTime>
    <clientCorrelator>224567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</tpc:callParticipantInformation>
```

6.5.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET, DELETE’ field in the response as per section 14.7 of [RFC 2616].

6.5.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET, DELETE’ field in the response as per section 14.7 of [RFC 2616].

6.5.6 DELETE

This operation is used to remove a participant from a call session, and to delete the information regarding this call participant from the server. The server MUST update the status of the participant to reflect the call termination, and MUST return in the response that final status of the resource.

The Server SHALL remove the call participant resource upon successful execution of the request. Further, the Server SHOULD keep the information about the call participant (with the status accordingly set to CallParticipantTerminated) in the

ancestor resource representing the call session, but is expected to remove the resourceURL field from the data structure representing a removed participant.

6.5.6.1 Example: Deleting a participant from a call session (Informative)

6.5.6.1.1 Request

```
DELETE /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002 HTTP/1.1
Accept: application/xml
Host: example.com
```

6.5.6.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participantAddress>tel:+19585550104</participantAddress>
  <participantName>John E. Xample</participantName>
  <participantStatus>CallParticipantTerminated</participantStatus>
  <startTime>2010-06-28T17:51:51</startTime>
  <duration>134</duration>
  <terminationCause>CallParticipantAborted</terminationCause>
  <clientCorrelator>224567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</tpc:callParticipantInformation>
```

6.6 Resource: Call session participant transfer

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}/transfer

This resource is used to transfer a participant from one call session to another.

6.6.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI
apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.
callSessionId	identifier of the call session (server-generated)
participantId	identifier of the call participant in the call session (server-generated)

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.6.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.6.3 GET

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.6.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.6.5 POST

This operation is used to transfer a participant from one call session to another. In case of successful transfer, "303 See Other" SHALL be returned, providing a Location header and a resourceReference root element with the location representing the call participant in the destination call session.

The maximum number of active participants allowed in a call session is defined by operator policies, but SHALL NOT be smaller than 2. The server SHALL NOT add the participant, and SHALL return a policy error POL0240 "Too many participants" in case the limit is exceeded.

6.6.5.1 Example: Transferring a participant from one call session to another (Informative)

6.6.5.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002/transfer HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Content-Length: nnnn
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:transferParameters xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <destinationCallSession>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002</destinationCallSession>
</tpc:transferParameters>
```

6.6.5.1.2 Response

```
HTTP/1.1 303 See Other
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt003
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt003</resourceURL>
</common:resourceReference>
```

6.6.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.7 Resource: Call session participant termination

The resource used is:

http://{serverRoot}/thirdpartycall/{apiVersion}/callSessions/{callSessionId}/participants/{participantId}/terminate

This resource is used to remove a participant from a call session, keeping the participant information on the server. The server deletes the information about terminated call sessions after a certain time interval, as defined by service provider policies.

6.7.1 Request URL variables

The following request URL variables are common for all HTTP commands:

Name	Description
serverRoot	server base url: hostname+port+base path. Example: example.com/exampleAPI
apiVersion	version of the API clients want to use. The value of this variable is defined in section 5.1.
callSessionId	identifier of the call session (server-generated)
participantId	identifier of the call participant in the call session (server-generated)

See section 6 for a statement on the escaping of reserved characters in URL variables.

6.7.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Third Party Call, see section 7.

6.7.3 GET

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.7.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

6.7.5 POST

This operation is used to delete a participant from a call session, keeping the participant information on the server..

6.7.5.1 Example: Deleting a participant from a call session without removing the status information (Informative)

6.7.5.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001/terminate HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<tpc:terminationParameters xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1"/>
```

6.7.5.1.2 Response

```
HTTP/1.1 204 No Content
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

6.7.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 14.7 of [RFC 2616].

7. Fault definitions

7.1 Service Exceptions

For common Service Exceptions refer to [REST_NetAPI_Common].

The following additional Service Exception codes are defined for the Third Party Call API.

7.1.1 SVC0261: Call Session already terminated

Name	Description
MessageID	SVC0261
Text	Call session has already been terminated
Variables	None
HTTP status code(s)	410 Gone, 403 Forbidden

In case the resource representing the call session is still available, the status code 403 SHOULD be used; otherwise, the status code 410 SHOULD be used.

7.2 Policy Exceptions

For common Policy Exceptions refer to [REST_NetAPI_Common].

There are no additional Policy Exception codes defined for the Third Party Call API.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Version OMA-TS-REST_NetAPI_ThirdPartyCall-V1_0	03 May 2011	Many	Structural changes to fit the OMA RESTful Network API release. This version inherits the technical content of OMA-TS-ParlayREST_ThirdPartyCall-V1_0-20110111-C and applies changes according to ARC INP 30R01, 98R02, 155R01,156R01, 65R02, 175R01, 186, 187R02 and 161R02
	23 May 2011	Many	Adapted to new REST NetAPI TS template OMA-TEMPLATE-Technical_Spec_RESTful_Network_API-20110502-D, see CR OMA-REST-NetAPI-2011-0033R01 Implemented OMA-ARC-REST-NetAPI-2011-0017R02-INP_ApiVersion_in_NetAPI_TSs
	14 Jul 2011	Many	Implemented OMA-ARC-REST-NetAPI-2011-0143-CR_3PC_fictional_phone_numbers
	27 Jul 2011	Many	Implemented OMA-ARC-REST-NetAPI-2011-0171-CR_3PC_tel_URI_fixes_and_Notif_channel_changes
	20 Sep 2011	Many	Implemented OMA-ARC-REST-NetAPI-2011-0246R01-CR_ACR_3PC
	28 Nov 2011	Many	Implemented OMA-ARC-REST-NetAPI-2011-0401-CR_ThirdPartyCall_actions_and_editorial_CONR_comments
	29 Nov 2011	Many	Implemented CRs: - OMA-ARC-REST-NetAPI-2011-0431R03-CR_3PC_Annex_G - OMA-ARC-REST-NetAPI-2011-0424-INP_HTML_401_reference_blueprint
	13 Jan 2012	Many	Implemented CRs: - OMA-ARC-REST-NetAPI-2011-0434R01-INP_Blueprint_for_APIs_changes_for_ACR_Authorization - OMA-ARC-REST-NetAPI-2012-0008R02-CR_TS_3PC_CONR_resolution
	07 Feb 2012	Many	OMA-ARC-REST-NetAPI-2012-0035-CR_ThirdPartyCall_various_changes implemented
	14 Feb 2012	Many	OMA-ARC-REST-NetAPI-2012-0053-CR_Moving_call_specific_stuff_from_Common_to_3PC_TS_ThirdPartyCall implemented
	27 Feb 2012	4.1, G.1.2	OMA-ARC-REST-NetAPI-2012-0073R02-CR_ThirdPartyCall_more_CONR_resolutiuons implemented
	12 Mar 2012	D.4	OMA-ARC-REST-NetAPI-2012-0095-CR_3PC_small_fix implemented
Candidate Version OMA-TS-REST_NetAPI_ThirdPartyCall-V1_0	27 Mar 2012	n/a	Status changed to Candidate by TP TP Ref # OMA-TP-2012-0123-INP_REST_NetAPI_ThirdPartyCall_1_0_ERP_and_ETR_for_Candidate_Approval

Appendix B. Static Conformance Requirements (Normative)

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

B.1 SCR for REST.3PC Server

Item	Function	Reference	Requirement
REST-3PC-SUPPORT-S-001-M	Support for the RESTful Third Party Call API	5, 6	
REST-3PC-SUPPORT-S-002-M	Support for the XML request & response format	6	
REST-3PC-SUPPORT-S-003-M	Support for the JSON request & response format	6	
REST- 3PC-SUPPORT-S-004-O	Support for the application/x-www-form-urlencoded format	Appendix C	

B.1.1 SCR for REST.3PC.Sessions Server

Item	Function	Reference	Requirement
REST-3PC-SESS-S-001-M	Support for call sessions	6.1	
REST-3PC-SESS-S-002-O	Retrieving a list of all call sessions – GET	6.1.3	
REST-3PC-SESS-S-003-M	Creating a call session – POST (XML or JSON)	6.1.5	
REST-3PC-SESS-S-004-O	Creating a call session – POST (application/x-www-form-urlencoded)	C.1	
REST-3PC-SESS-S-005-M	Support for setting up announcements and subscribing to notifications upon call session creation	6.1.5	

B.1.2 SCR for REST.3PC.IndividualSession Server

Item	Function	Reference	Requirement
REST-3PC-INDSESS-S-001-M	Support for access to individual call sessions	6.2	
REST-3PC-INDSESS-S-002-M	Retrieving call session information – GET	6.2.3	
REST-3PC-INDSESS-S-003-M	Terminating a call session and removing status information – DELETE	6.2.6	

B.1.3 SCR for REST.3PC.IndividualSession.Terminate Server

Item	Function	Reference	Requirement
REST-3PC-INDSESS-TERM-S-001-O	Support for terminating a call session without removing the status information	6.3	REST-3PC-INDSESS-TERM-S-002-O
REST-3PC-INDSESS-	Terminating a call session without	6.3.5	

Item	Function	Reference	Requirement
TERM-S-002-O	removing the status information – POST (XML or JSON)		
REST-3PC-INDSESS-TERM-S-003-O	Terminating a call session without removing the status information – POST (application/x-www-form-urlencoded)	C.2	

B.1.4 SCR for REST.3PC.IndividualSession.Participants Server

Item	Function	Reference	Requirement
REST-3PC-INDSESS-PART-S-001-M	Support for access to a list of call session participants	6.4	
REST-3PC-INDSESS-PART-S-002-M	Retrieving information about all call participants – GET	6.4.3	
REST-3PC-INDSESS-PART-S-003-M	Adding a participant to a call session – POST (XML or JSON)	6.4.5	
REST-3PC-INDSESS-PART-S-004-O	Adding a participant to a call session – POST (application/x-www-form-urlencoded)	C.3	

B.1.5 SCR for REST.3PC.IndividualSession.IndividualParticipant Server

Item	Function	Reference	Requirement
REST-3PC-INDSESS-INDPART-S-001-M	Support for access to information about a call participant	6.5	
REST-3PC-INDSESS-INDPART-S-002-M	Retrieving information about a call participant – GET	6.5.3	
REST-3PC-INDSESS-INDPART-S-003-M	Deleting a participant and the related status information from a call session – DELETE	6.5.6	

B.1.6 SCR for REST.3PC.IndividualSession.IndividualParticipant.Transfer Server

Item	Function	Reference	Requirement
REST-3PC-INDSESS-INDPART-TRANS-S-001-O	Support for transferring a call participant to another call session	6.6	REST-3PC-INDSESS-INDPART-TRANS-S-002-O
REST-3PC-INDSESS-INDPART-TRANS-S-002-O	Transferring a call participant to another call session – POST (XML or JSON)	6.6.5	
REST-3PC-INDSESS-INDPART-TRANS-S-003-O	Transferring a call participant to another call session – POST (application/x-www-form-urlencoded)	C.4	

B.1.7 SCR for REST.3PC.IndividualSession.IndividualParticipant.Terminate Server

Item	Function	Reference	Requirement
REST-3PC-INDSESS-INDPART-TERM-S-001-O	Support for deleting a participant from a call session, keeping the related status information	6.7	REST-3PC-INDSESS-INDPART-TERM-S-002-O
REST-3PC-INDSESS-INDPART-TERM-S-002-O	Deleting a call participant from a call session, keeping the related status information – POST (XML or JSON)	6.7.5	
REST-3PC-INDSESS-INDPART-TERM-S-003-O	Deleting a call participant from a call session, keeping the related status information – POST (application/x-www-form-urlencoded)	C.5	

Appendix C. Application/x-www-form-urlencoded Request Format for POST Operations (Normative)

This section defines a format for the RESTful Third Party Call API requests where the body of the request is encoded using the application/x-www-form-urlencoded MIME type.

Note: only the request body is encoded as application/x-www-form-urlencoded, the response is still encoded as XML or JSON depending on the preference of the client and the capabilities of the server.

Names and values MUST follow the application/x-www-form-urlencoded character escaping rules at [W3C_URLENC].

The encoding is defined below for all Third Party Call REST operations which are based on POST requests.

C.1 Creating a call session

This operation is used to create a call session, see section 6.1.5.

The OPTIONAL notifyURL parameter either contains the Client-side Notification URL (as defined by the client) or the Server-side Notification URL (as obtained during the creation of the Notification Channel [REST_NetAPI_NotificationChannel]).

The request parameters are as follows:

Name	Type/Values	Optional	Description
participantAddress	xsd:anyURI [1..unbounded]	No	Address of the user (e.g. 'sip' URI, 'tel' URI, 'acr' URI). The first element in this list is considered to denote the “A-Party” (i.e. originator) of the call session.
participantName	xsd:string [0..unbounded]	Yes	The name of the participant.
participantAnnouncement	xsd:string	Yes	A reference to an announcement to be played to the participants listed in the “participant” element upon joining the call. If the “originatorAnnouncement” element is set in addition, that announcement SHALL be played to the first participant instead of this announcement. If this element is not set by the client, no announcement SHALL be played. The server SHALL understand the value “default” and play a default announcement if this value is provided as the content of this element. Further values are allowed as long as they are meaningful to the server, but these values are out of scope of this specification.

originatorAnnouncement	xsd:string	Yes	A reference to an announcement that is played to the first participant listed in the “participant” element. The first participant is viewed as the originator. This element SHALL NOT be provided if the element “participantAnnouncement” The content of the field is out of scope for this specification but is assumed to a value that is meaningful to the server.
notifyURL	xsd:anyURI	Yes	URL on which to notify the client of events related to this call session, e.g. participant joining call. For the use of Client-side Notification URLs and Server-side Notification URLs in this parameter, see sections 6.1 and 6.1.5.
callbackData	xsd:string	Yes	Data the application can register with the server when subscribing to notifications, and that are passed back unchanged in each of the related notifications. This parameter SHALL NOT be present if “notifyURL” is not present.
notificationFormat	common:NotificationFormat	Yes	Default: XML Application can specify the format of the resource representation in notifications that are related to this subscription. The choice is between {XML, JSON} This parameter SHALL NOT be present if “notifyURL” is not present.
chargingDescription	xsd:string [0..unbounded]	Yes	Description of charge to apply to this message. In case charging is required, this parameter MUST be present.
chargingCurrency	xsd:string	Yes	Currency of charge to apply to this message. In case chargingDescription is not present, this parameter MUST NOT be present.
chargingAmount	xsd:decimal	Yes	Charging amount to apply to this message. In case chargingDescription is not present, this parameter MUST NOT be present.
chargingCode	xsd:string	Yes	Charging code to apply to this message. In case chargingDescription

			is not present, this parameter MUST NOT be present.
media	Media [0..unbounded]	Yes	It identifies one or more media type(s) for the call, to be applied to the participants in the call session. If the parameter is omitted, the media type(s) are negotiated by the underlying network. Cardinality SHALL be the same as for mediaDirection.
mediaDirection	MediaDirection [0..unbounded]	Yes	It identifies one or more direction(s) of media for the call, to be applied to the participants in the call session. If the parameter is omitted, the media type(s) are negotiated by the underlying network. Cardinality SHALL be the same as for media.
changeMediaNotAllowed	xsd:boolean	Yes	If true, no call participant (user) in the call will be permitted to change media type during the call. If false the end user may change media type after the call is established as no network protection mechanism is set up to prevent participant (end user) initiated change of media type. Default: true
clientCorrelator	xsd:string	Yes	A correlator that the client can use to tag this particular resource representation during a request to create a resource on the server. This element MAY be present. Note: this allows the client to recover from communication failures during resource creation and therefore avoids re-creating the call session in such situations. In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the field is not present, the server SHALL NOT generate it.

If the operation was successful, it returns an HTTP Status of “201 Created”.

Regarding the clientCorrelator field, the note in section 5.2.2.2 applies.

C.1.1 Example 1: Creating a “plain” call session (Informative)

C.1.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

participantAddress=tel%3A%2B19585550101&
participantAddress=tel%3A%2B19585550102&
participantName=Max%20Muster&
participantName=Peter%20E.%20Xample&
clientCorrelator=104567
```

C.1.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc ="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participant>
    <participantAddress>tel:+19585550101</participantAddress>
    <participantName>Max Muster</participantName>
    <participantStatus>CallParticipantConnected</participantStatus>
    <startTime>2010-06-28T17:50:51</startTime>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001</resourceURL>
  </participant>
  <participant>
    <participantAddress>tel:+19585550102</participantAddress>
    <participantName>Peter E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002</resourceURL>
  </participant>
  <terminated>false</terminated>
  <clientCorrelator>104567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001</resourceURL>
</tpc:callSessionInformation>
```

C.1.2 Example 2: Creating a call session, setting up announcements and subscribing to notifications (Informative)

C.1.2.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
```

```
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

participantAddress=tel%3A%2B19585550101&
participantAddress=tel%3A%2B19585550102&
participantName=Max%20Muster&
participantName=Peter%20E.%20Xample&
participantAnnouncement=predefinedAnnouncement1ForParticipant&
originatorAnnouncement=predefinedAnnouncement1ForOriginator&
notifyURL=http%3A%2F%2Fapplication.example.com%2Fnotifications%2FNotificationURL&
clientCorrelator=104567
```

C.1.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callSessionInformation xmlns:tpc ="urn:oma:xml:rest:netapi:thirdpartycall:1">
  <participant>
    <participantAddress>tel:+19585550101</participantAddress>
    <participantName>Max Muster</participantName>
    <participantStatus>CallParticipantConnected</participantStatus>
    <startTime>2010-06-28T17:50:51</startTime>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003/participants/pt001</resourceURL>
  </participant>
  <participant>
    <participantAddress>tel:+19585550102</participantAddress>
    <participantName>Peter E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003/participants/pt002</resourceURL>
  </participant>
  <participantAnnouncement>predefinedAnnouncement1ForParticipant</participantAnnouncement>
  <originatorAnnouncement>predefinedAnnouncement1ForOriginator</originatorAnnouncement>
  <callbackReference>
     <notifyURL>http://application.example.com/notifications/NotificationURL</notifyURL>
  </callbackReference>
  <terminated>false</terminated>
  <clientCorrelator>104567</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003</resourceURL>
</tpc:callSessionInformation>
```

C.2 Terminating a call session without removing the status information

This operation is used to add a participant to a call session, see section 6.3.5.

The request parameters are as follows:

Name	Type/Values	Optional	Description
terminationParameters	(empty)	No	Provides the body of the request, which is an empty string in this version of the specification.

If the operation was successful, it returns an HTTP Status of “204 No Content”.

C.2.1 Example (Informative)

C.2.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs001/terminate HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

terminationParameters=
```

C.2.1.2 Response

```
HTTP/1.1 204 No Content
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

C.3 Adding a participant to a call session

This operation is used to add a participant to a call session, see section 6.4.5.

The request parameters are as follows:

Name	Type/Values	Optional	Description
participantAddress	xsd:anyURI	No	Address of the user (e.g. 'sip' URI, 'tel' URI, 'acr' URI).
participantName	xsd:string	Yes	The name of the participant.
media	Media [0..unbounded]	Yes	When applicable, it indicates the type of media currently used in the call for the identified participant. Cardinality SHALL be the same as for mediaDirection.
mediaDirection	MediaDirection [0..unbounded]	Yes	When applicable, it indicates the direction of media currently used in the call for the identified participant. Cardinality SHALL be the same as for media.
clientCorrelator	xsd:string	Yes	A correlator that the client can use to tag this particular resource

			representation during a request to create a resource on the server. This element MAY be present. Note: this allows the client to recover from communication failures during resource creation and therefore avoids trying to re-connect an already connected participant in such situations. In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the field is not present, the server SHALL NOT generate it.

If the operation was successful, it returns an HTTP Status of "201 Created".

Regarding the clientCorrelator field, the note in section 5.2.2.2 applies.

C.3.1 Example 1, using tel URI (Informative)

C.3.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

participantAddress=tel%3A%2B19585550104&
participantName=John%20E.%20Xample&
clientCorrelator=224567
```

C.3.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participantAddress>tel:+19585550104</participantAddress>
    <participantName>John E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <clientCorrelator>224567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</tpc:callParticipantInformation>
```

C.3.2 Example 2, using ACR (Informative)

C.3.2.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

participantAddress=acr%3Apseudonym123&
participantName=John%20E.%20Xample&
clientCorrelator=224567
```

C.3.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<tpc:callParticipantInformation xmlns:tpc="urn:oma:xml:rest:netapi:thirdpartycall:1">
    <participantAddress>acr:pseudonym123</participantAddress>
    <participantName>John E. Xample</participantName>
    <participantStatus>CallParticipantInitial</participantStatus>
    <clientCorrelator>224567</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002</resourceURL>
</tpc:callParticipantInformation>
```

C.4 Transferring a participant from one call session to another

This operation is used to transfer a participant from one call session to another, see section 6.6.5.

The request parameters are as follows:

Name	Type/Values	Optional	Description
destinationCallSession	xsd:anyURI	No	The URI of the call session to which the participant is to be transferred.

If the operation was successful, it returns an HTTP Status of “303 See Other”.

C.4.1 Example (Informative)

C.4.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002/transfer HTTP/1.1
```

```
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

destinationCallSession=http%3A%2F%2Fexample.com%2F1%2Fthirdpartycall%2FcallSessions%2Fcs002
```

C.4.1.2 Response

```
HTTP/1.1 303 See Other
Content-Type: application/xml
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt003
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL>http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt003</resourceURL>
</common:resourceReference>
```

C.5 Deleting a participant from a call session without removing the status information

This operation is used to add a participant to a call session, see section 6.7.5.

The request parameters are as follows:

Name	Type/Values	Optional	Description
terminationParameters	(empty)	No	Provides the body of the request, which is an empty string in this version of the specification.

If the operation was successful, it returns an HTTP Status of “204 No Content”.

C.5.1 Example (Informative)

C.5.1.1 Request

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001/terminate HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: nnnn
Accept: application/xml
Host: example.com

terminationParameters=
```

C.5.1.2 Response

```
HTTP/1.1 204 No Content
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

Appendix D. JSON examples (Informative)

JSON (JavaScript Object Notation) is a lightweight, text-based, language-independent data interchange format. It provides a simple means to represent basic name-value pairs, arrays and objects. JSON is relatively trivial to parse and evaluate using standard JavaScript libraries, and hence is suited for invocations from browsers or other processors with JavaScript engines. Further information on JSON can be found at [RFC 4627].

The following examples show the request and response for various operations using a JSON binding. The examples follow the XML to JSON serialization rules in [REST_NetAPI_Common]. A JSON response can be obtained by using the content type negotiation mechanism specified in [REST_NetAPI_Common].

For full details on the operations themselves please refer to the section number indicated.

D.1 Retrieving a list of all call sessions (section 6.1.3.1)

Request:

```
GET /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callSessionList": {
   "callSession": [
      {
         "clientCorrelator": "104567",
         "participant": [
            {
               "participantAddress": "tel:+19585550101",
               "participantName": "Max Muster",
               "participantStatus": "CallParticipantConnected",
               "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001",
               "startTime": "2010-06-28T17:50:51"
            },
            {
               "participantAddress": "tel:+19585550102",
               "participantName": "Peter E. Xample",
               "participantStatus": "CallParticipantInitial",
               "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002",
               "startTime": "2010-06-28T17:50:51"
            }
         ],
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001",
         "terminated": "false"
      },
      {
```

```
        "clientCorrelator": "204567",
        "participant": [
          {
            "duration": "135",
            "participantAddress": "tel:+19585550103",
            "participantName": "Mary E. Xample",
            "participantStatus": "CallParticipantTerminated",
            "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001 ",
            "startTime": "2010-06-28T17:50:51",
            "terminationCause": "CallParticipantAborted"
          },
          {
            "clientCorrelator": "224567",
            "duration": "134",
            "participantAddress": "tel:+19585550104",
            "participantName": "John E. Xample",
            "participantStatus": "CallParticipantTerminated",
            "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002",
            "startTime": "2010-06-28T17:51:51",
            "terminationCause": "CallParticipantAborted"
          }
        ],
        "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002",
        "terminated": "true"
      }
    ],
    "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions"
}}
```


D.2 Creating a “plain” call session, response with copy of created resource (section 6.1.5.1)

Request:


```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"callSessionInformation": {
    "clientCorrelator": "104567",
    "participant": [
      {
        "participantAddress": "tel:+19585550101",
        "participantName": "Max Muster"
      },
      {
        "participantAddress": "tel:+19585550102",
        "participantName": "Peter E. Xample"
      }
    ]
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callSessionInformation": {
   "clientCorrelator": "104567",
   "participant": [
      {
         "participantAddress": "tel:+19585550101",
         "participantName": "Max Muster",
         "participantStatus": "CallParticipantConnected",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001",
         "startTime": "2010-06-28T17:50:51"
      },
      {
         "participantAddress": "tel:+19585550102",
         "participantName": "Peter E. Xample",
         "participantStatus": "CallParticipantInitial",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002"
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001",
   "terminated": "false"
}}
```

D.3 Creating a “plain” call session, response with location of created resource (section 6.1.5.2)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"callSessionInformation": {
   "clientCorrelator": "104567",
   "participant": [
      {
         "participantAddress": "tel:+19585550101",
         "participantName": "Max Muster"
      },
      {
         "participantAddress": "tel:+19585550102",
         "participantName": "Peter E. Xample"
      }
   ]
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"resourceReference": {"resourceURL": " http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001"}}
```

D.4 Creating a call session, setting up announcements and subscribing to notifications (section 6.1.5.3)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"callSessionInformation": {
   "callbackReference": {"notifyURL": "http://application.example.com/notifications/NotificationURL"},
   "clientCorrelator": "304567",
   "originatorAnnouncement": "predefinedAnnouncement1ForOriginator",
   "participant": [
      {
         "participantAddress": "tel:+19585550101",
         "participantName": "Max Muster"
      },
      {
         "participantAddress": "tel:+19585550102",
         "participantName": "Peter E. Xample"
      }
   ],
   "participantAnnouncement": "predefinedAnnouncement1ForParticipant"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callSessionInformation": {
   "callbackReference": {"notifyURL": "http://application.example.com/notifications/NotificationURL"},
   "clientCorrelator": "304567",
   "originatorAnnouncement": "predefinedAnnouncement1ForOriginator",
   "participant": [
```

```
      {
         "participantAddress": "tel:+19585550101",
         "participantName": "Max Muster",
         "participantStatus": "CallParticipantConnected",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003/participants/pt001",
         "startTime": "2010-06-28T17:50:51"
      },
      {
         "participantAddress": "tel:+19585550102",
         "participantName": "Peter E. Xample",
         "participantStatus": "CallParticipantInitial",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003/participants/pt002"
      }
   ],
   "participantAnnouncement": "predefinedAnnouncement1ForParticipant",
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs003",
   "terminated": "false"
}}
```


D.5 Retrieving call session information (section 6.2.3.1)

Request:

```
GET /exampleAPI/thirdpartycall/v1/callSessions/cs001?resFormat=JSON HTTP/1.1
Host: example.com
```

Response:


```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callSessionInformation": {
   "clientCorrelator": "104567",
   "participant": [
      {
         "participantAddress": "tel:+19585550101",
         "participantName": "Max Muster",
         "participantStatus": "CallParticipantConnected",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt001",
         "startTime": "2010-06-28T17:50:51"
      },
      {
         "participantAddress": "tel:+19585550102",
         "participantName": "Peter E. Xample",
         "participantStatus": "CallParticipantInitial",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002"
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs001",
   "terminated": "false"
}}
```

D.6 Terminating a call session (section 6.2.6.1)

Request:

```
DELETE /exampleAPI/thirdpartycall/v1/callSessions/cs002 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callSessionInformation": {
   "clientCorrelator": "204567",
   "participant": [
      {
         "duration": "135",
         "participantAddress": "tel:+19585550103",
         "participantName": "Mary E. Xample ",
         "participantStatus": "CallParticipantTerminated",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001",
         "startTime": "2010-06-28T17:50:51",
         "terminationCause": "CallParticipantAborted"
      },
      {
         "clientCorrelator": "224567",
         "duration": "134",
         "participantAddress": "tel:+19585550104",
         "participantName": "John E. Xample",
         "participantStatus": "CallParticipantTerminated",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002",
         "startTime": "2010-06-28T17:51:51",
         "terminationCause": "CallParticipantAborted"
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002",
   "terminated": "true"
}}
```

D.7 Terminating a call session without removing the status information (section 6.3.5.1)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs001/terminate HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
```

```
Host: example.com

{"terminationParameters": null}
```

Response:

```
HTTP/1.1 204 No Content
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

D.8 Retrieving information about all call participants (section 6.4.3.1)

Request:

```
GET /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callParticipantList": {
   "participant": [
      {
         "duration": "135",
         "participantAddress": "tel:+19585550103",
         "participantName": "Mary E. Xample ",
         "participantStatus": "CallParticipantTerminated",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001",
         "startTime": "2010-06-28T17:50:51",
         "terminationCause": "CallParticipantAborted"
      },
      {
         "clientCorrelator": "224567",
         "duration": "134",
         "participantAddress": "tel:+19585550104",
         "participantName": "John E. Xample",
         "participantStatus": "CallParticipantTerminated",
         "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002",
         "startTime": "2010-06-28T17:51:51",
         "terminationCause": "CallParticipantAborted"
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants"
}}
```

D.9 Adding a participant to a call session, response with copy of created resource (section 6.4.5.1)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "participantAddress": "tel:+19585550104",
   "participantName": "John E. Xample"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "participantAddress": "tel:+19585550104",
   "participantName": "John E. Xample",
   "participantStatus": "CallParticipantInitial",
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002"
}}
```

D.10 Adding a participant to a call session, response with location of created resource (section 6.4.5.2)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "participantAddress": "tel:+19585550104",
   "participantName": "John E. Xample"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"resourceReference": {
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002"
}}
```

D.11 Adding a participant to a call session, using ACR (see section 6.4.5.3)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "participantAddress": "acr:pseudonym123",
   "participantName": "John E. Xample"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "participantAddress": "acr:pseudonym123",
   "participantName": "John E. Xample",
   "participantStatus": "CallParticipantInitial",
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002"
}}
```

D.12 Retrieving information about a call participant (section 6.5.3.1)

Request:

```
GET /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "participantAddress": "tel:+19585550104",
   "participantName": "John E. Xample",
   "participantStatus": "CallParticipantConnected",
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002",
   "startTime": "2010-06-28T17:51:51"
}}
```

D.13 Deleting a participant from a call session (section 6.5.6.1)

Request:

```
DELETE /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"callParticipantInformation": {
   "clientCorrelator": "224567",
   "duration": "134",
   "participantAddress": "tel:+19585550104",
   "participantName": "John E. Xample",
   "participantStatus": "CallParticipantTerminated",
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt002",
   "startTime": "2010-06-28T17:51:51",
   "terminationCause": "CallParticipantAborted"
}}
```

D.14 Transferring a participant from one call session to another (section 6.6.5.1)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs001/participants/pt002/transfer HTTP/1.1
Content-Type: application/json
Accept: application/json
Content-Length: nnnn
Host: example.com

{"transferParameters": {
   "destinationCallSession": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002"
}}
```

Response:

```
HTTP/1.1 303 See Other
Content-Type: application/json
Location: http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt003
Content-Length: nnnn
Date: Mon, 28 Jun 2010 17:51:59 GMT

{"resourceReference": {
   "resourceURL": "http://example.com/exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt003"
}}
```

D.15 Deleting a participant from a call session without removing the status information (section 6.7.5.1)

Request:

```
POST /exampleAPI/thirdpartycall/v1/callSessions/cs002/participants/pt001/terminate HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"terminationParameters": null}
```

Response:

```
HTTP/1.1 204 No Content
Date: Mon, 28 Jun 2010 17:51:59 GMT
```

Appendix E. Parlay X operations mapping (Informative)

The table below illustrates the mapping between REST resources/methods and Parlay X [3GPP 29.199-02] equivalent operations.

REST Resource	RESTMethod	REST Section reference	Parlay X equivalent operation
All call sessions	POST	6.1.5	makeCallSession
Individual call session	GET	6.2.3	getCallSessionInformation
Individual call session	DELETE	6.2.6	endCallSession
Call session termination	POST	6.3.5	endCallSession
All participants of a call session	POST	6.4.5	addCallParticipant
Individual call session participant	GET	6.5.3	getCallParticipantInformation
Individual call session participant	DELETE	6.5.6	deleteCallParticipant
Call session participant transfer	POST	6.6.5	transferCallParticipant
Call session participant termination	POST	6.7.5	deleteCallParticipant

Table 1: Parlay X operations mapping

Appendix F. Light-weight resources (Informative)

As this version of the specification does not define any light-weight resources, this Appendix is empty.

Appendix G. Authorization aspects (Normative)

This appendix specifies how to use the RESTful Third Party Call API in combination with some authorization frameworks.

G.1 Use with OMA Authorization Framework for Network APIs

The RESTful Third Party Call API MAY support the authorization framework defined in [Autho4API_10].

A RESTful Third Party Call API supporting [Autho4API_10]:

- SHALL conform to section D.1 of [REST_NetAPI_Common];
- SHALL conform to this section G.1.

G.1.1 Scope values

G.1.1.1 Definitions

In compliance with [Autho4API_10], an authorization server serving clients requests for getting authorized access to the resources exposed by the RESTful Third Party Call API:

- SHALL support the scope values defined in the table below;
- MAY support scope values not defined in this specification.

Scope value	Description	For one-time access token
oma_rest_thirdpartycall.all_{apiVersion}	Provide access to all defined operations on the resources in this version of the API. The {apiVersion} part of this identifier SHALL have the same value as the “apiVersion” URL variable which is defined in section5.1. This scope value is the union of the other scope values listed in the next rows of this table.	No
oma_rest_ thirdpartycall.call	Provide access to all defined operations regarding calls except participant transfers. The number of participants is restricted to two.	No
oma_rest_ thirdpartycall.confcall	Provide access to all defined operations regarding calls. The allowed number of participants is	No

Scope value	Description	For one-time access token
	greater than two (and defined by operator policies).	
oma_rest_ thirdpartycall.transfer	Provide access to participant transfers	No

Table 2: Scope values for RESTful Third Party Call API

G.1.1.2 Downscoping

In the case where the client requests authorization for "oma_rest_thirdpartycall.all_{apiVersion}" scope, the authorization server and/or resource owner MAY restrict the granted scope to some of the following scope values:

- "oma_rest_thirdpartycall.call"
- "oma_rest_thirdpartycall.confcall"
- "oma_rest_thirdpartycall.transfer"

G.1.1.3 Mapping with resources and methods

Tables in this section specify how the scope values defined in section G.1.1.1 for the RESTful Third Party Call API map to the REST resources and methods of this API. In these tables, the root "oma_rest_thirdpartycall." of scope values is omitted for readability reasons.

Resource	URL Base URL: http://{serverRoot}/thirdpartycall/{apiVersion}	Section refe-rence	HTTP verbs			
			GET	PUT	POST	DELETE
All Call Sessions	/callSessions	6.1	all_{apiVersion} or call or confcall	n/a	all_{apiVersion} or call or confcall	n/a
Individual Call Session	callSessions/{callSessionId}	6.2	all_{apiVersion} or call or confcall	n/a	n/a	all_{apiVersion} or call or confcall
Call Session Termination	callSessions/{callSessionId}/terminate	6.3	n/a	n/a	all_{apiVersion} or call or confcall	n/a
All Participants of a	callSessions/{callSessionId}/participants	6.4	all_{apiVersion} or	n/a	all_{apiVersion}	n/a

Resource	URL Base URL: http://{serverRoot}/thirdpartycall/{apiVersion}	Section refe-rence	HTTP verbs			
			GET	PUT	POST	DELETE
Call Session			call or confcall		or call or confcall	
Individual Call Session Participant	callSessions/{callSessionId}/participants/{participantId}	6.5	all_{apiVersion} or call or confcall	n/a	n/a	all_{apiVersion} or call or confcall
Call Session Participant Transfer	callSessions/{callSessionId}/participants/{participantId} / transfer	6.6	n/a	n/a	all_{apiVersion} or transfer	n/a
Call Session Participant Termination	callSessions/{callSessionId}/participants/{participantId} / terminate	6.7	n/a	n/a	all_{apiVersion} or call or confcall	n/a

Table 2: Required scope values for Third Party Call

G.1.2 Use of 'acr:Authorization'

This section specifies the use of 'acr:Authorization' in place of an end user identifier (i.e. "participantAddress") in a data structure.

An 'acr' URI of the form 'acr:Authorization', where 'Authorization' is a reserved keyword MAY be used to avoid exposing a real end user identifier to the application.

A client MAY use 'acr:Authorization' in a data structure in place of a user identifier (such as "participantAddress"), when the RESTful Third Party Call API is used in combination with [Autho4API_10].

In the case the RESTful Third Party Call API supports [Autho4API_10], the server:

- SHALL accept 'acr:Authorization' as a valid value for a user Id variable in the body (i.e. "participantAddress").
- SHALL conform to [REST_Common_TS] section 5.8.1.1 regarding the processing of 'acr:Authorization'.