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API User Guide for the Cisco TelePresence Exchange System Release 1.0

April 1, 2011

CONTENTS

Preface

Revised: April 1, 2011

This preface describes the audience for the *API User Guide for the Cisco TelePresence Exchange System Release 1.0*, and the document organization and conventions.

Audience

This guide is a technical resource for application developers who build custom applications that use the Cisco TelePresence Exchange System Application Programming Interface (API).

You should have an advanced level of understanding of web services technology and be familiar with the functionality offered by the Cisco TelePresence Exchange System.

Book Organization

The *API User Guide for the Cisco TelePresence Exchange System Release 1.0* includes the following chapters:

Chapter	Contents
Overview	Provides an overview of the Cisco TelePresence Exchange System APIs.
Call Detail Recording (CDR) API	Describes the API services for retrieving and managing call detail records.
Scheduling API	Describes the API services for scheduling and managing meetings.

Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands, command options, and keywords are in **boldface**.
italic font	Arguments for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.
{ x | y | z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
`screen` font	Terminal sessions and information the system displays are in `screen` font.
`boldface screen` font	Information you must enter is in **`boldface screen`** font.
`italic screen` font	Arguments for which you supply values are in *`italic screen`* font.
⟶	`This pointer highlights an important line of text in an example.`
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Non-printing characters, such as passwords are in angle brackets.

Notes use the following conventions:

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Cautions use the following conventions:

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New* in Cisco Product Documentation as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

Overview

Revised: April 1, 2011

The Cisco TelePresence Exchange System is an integrated video service-creation platform that enables service providers and strategic partners to offer secure cloud-based managed and hosted Cisco TelePresence and business video services. The Cisco TelePresence Exchange System is a software environment that simplifies end-to-end subscriber service provisioning; optimizes intelligent call routing for endpoints and network bandwidth; manages the call processing and allocation of media resources for conferencing; consolidates a centralized control point for management, billing, and administration; and presents an open application programming interface (API) for application integration such as scheduling and directory services.

As part of the Cisco TelePresence Exchange solution, the Cisco TelePresence Exchange System exposes a set of standards-based APIs to provide integration across business and operational support systems. Based on proven technology and powered by a fully redundant and horizontally scalable architecture, it delivers an open, scalable, and robust multi-tenant solution that can grow in scale and functions based on service needs.

This chapter provides a general description of the APIs and includes the following sections:

API Overview

Cisco TelePresence Exchange System provides the following APIs:

- Scheduling

  The Scheduling API provides web services to control scheduling of services such as Meet-Me and two-party scheduled meetings on the Cisco TelePresence Exchange System.

Using the API, you can schedule, modify, or cancel meetings and retrieve information about organizations and rooms.

*   Call Detail Recording (CDR)

    The CDR API provides web services to retrieve and manage call detail records for services provided by the Cisco TelePresence Exchange System.

The Cisco TelePresence Exchange System software image includes all components that are required to use the APIs. The APIs require no additional software download or installation.

Development Guidelines

Cisco maintains a policy of backward compatibility for up to two previous major releases of the Cisco TelePresence Exchange System APIs.

Cisco recommends the following practices to reduce the number and extent of any updates that may be necessary:

*   New interface events, methods, responses, headers, parameters, attributes, elements, or new values of existing elements, will most likely be introduced in new versions of the APIs. Each new version of the API includes a separate Web Services Description Language (WSDL). When a developer upgrades to the new API version, they might need to provide additional generic or null parameters to existing service methods or call additional methods to achieve the same result.

*   Previous interface events, methods, responses, headers, parameters, attributes, and other elements, will remain defined in the API; and, will appear in the API in the form of separate WSDLs for each supported release.

*   Applications must not be dependent on interface behavior that is the result of defects (behavior not consistent with published interface specifications) since the behavior can change when the defect is fixed.

*   Cisco recommends that developers have a strategy for migration to newer Cisco TelePresence Exchange system API versions. Cisco provides a backward compatibility policy for up to two releases to provide timing flexibility for this migration. Developers must note cases in which Cisco removes items such as methods, parameters, responses, and attributes in newer API versions, and ensure that they remove these from their application as soon as possible.

About Web Services

The web services standards define a framework for clients to request services over a network by using XML-based messaging. Web services operations use an XML-based protocol such as Simple Object Access Protocol (SOAP), which defines the envelope structure, encoding rules, and conventions for representing web service requests and responses. These requests and responses are transmitted as XML-based SOAP messages over HTTP.

Although SOAP messages can be complex, a web services framework hides the complexity from the client developer. A client creates a proxy (a local object representing the service) and then invokes methods on the proxy. The web services framework converts the API method calls and responses to and from SOAP messages. Cisco recommends that developers use powerful web services frameworks such as Axis for Java developers to simplify development and avoid direct XML document manipulation.

About the API Architecture

You access the Cisco TelePresence Exchange System APIs by using a standards-based web services infrastructure that is implemented on the administration server.

API Clients can run on different OS platforms and communicate with the administration server by using SOAP-based web services. SOAP provides an XML-based communication protocol and encoding format for inter-application communication. The Cisco TelePresence Exchange System API uses document-style web service operation.

The API conforms to the SOAP Specification 1.1 and the WSDL Specification 1.1.

The SOAP messages (between client and server) are transported over HTTP to a unique URL that is associated with each of the APIs.

The web services provided by the API are specified by a set of WSDL files. Each web service is defined as a request-response operation (each request results in a correlated response message from the Cisco TelePresence Exchange System). The response message contains information that is relevant to the requested action or data query.

Each request (and the associated response) is a complete transaction. There is no requirement for session or state information to be maintained on the server between requests from a given client.

Security

The current API uses HTTP basic access authentication. API clients must include authentication credentials with each API request. The mechanism is HTTP basic access authentication using Base64 encoding of username and password.

API Versions

The Cisco implementation of Cisco TelePresence Exchange System APIs may change over time in response to the evolving needs of our partner community. Cisco will maintain backward compatibility for up to two major releases of the product.

The APIs provide a unique URL for each supported version of the API, so that clients can control the timing of their migration to newer versions of the API.

Required Parameters

Most API methods have one or more required parameters. When the client provides an empty or null value for any required parameter, the Cisco TelePresence Exchange System will throw a missing parameter exception noting the missing parameter(s).

Error Handling

The Cisco TelePresence Exchange System API communicates an error condition to the client by returning an exception message instead of a response message. The exception message contains an error code and string field that provides additional details about the exception.

The Cisco TelePresence Exchange System API communicates an error condition to the client by returning an HTTP 500 response containing a SOAP fault. The fault contains an error code and string field that provides additional details about the exception.

Queries

For services that retrieve information about data objects in the Cisco TelePresence Exchange System (such as rooms or meetings), the API provides a generalized query mechanism to allow clients to flexibly construct the desired queries. Simple and complex queries are supported. A null query is interpreted as a request to return all of the entities.

C H A P T E R **2**

CDR API

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The Cisco TelePresence Exchange System provides an Application Programming Interface (API) for managing and retrieving call records produced by the Call Detail Record (CDR) system.

Familiarity with telephony is required for readers to understand the terms and concepts within this chapter.

This chapter provides a description of the CDR API and includes the following sections:

Getting Started

This section describes how to get started with the CDR API and includes the following topics:

CDR API Overview

The CDR API provides services to accomplish the following types of task:

- Retrieve call detail records from the Cisco TelePresence Exchange System.

  The API provides web services to retrieve CDR records. These services are described in the Retrieving CDR Records, page 2-3.

- Perform tasks that are related to the API

  The API provides services that are related to managing the CDR API. These services are described in the Performing API-related Tasks, page 2-10.

Time Fields

In the CDR API, the date and time fields are stored in ISO 8601 format. Specifically, a calendar date has the following format: YYYY-MM-DD and the time of day employs a 24-hour time period. The letter T is used to separate the date and time fields. All times are UTC.

For example, the API would store the date of February 11, 2011 and the time of 12:00 PM PDT as follows:

2011-11-02T19:00:00-07:00

Obtaining the WSDL

You can access the WSDL file for the Scheduling API at the following URL:

http://<*DNS name or IP address for your admin server*>:8080/ctxapi/api/cdr?wsdl

The WSDL file provides a complete and accurate definition of the API that is supported by your Cisco TelePresence Exchange System. In the event of any discrepancies between the WSDL file and this document, you should follow the WSDL file definition.

Filtering CDRs

You can set a filter for all **get**, **get count**, and **purge** requests. By default, a request operates on all records defined for that command unless the API client specifies a subset of records for that get request.

Each of the filter parameters is optional. When the API client leaves all parameters set to null, then the **get**, **get count**, and **purge** commands apply to all records. To narrow the scope of the request, the client must set one or more of the filter parameters to non-null. For example, a client might only want the request to apply to Meet-Me calls for a single organization within a given month (such as starting from the first day of the month up until the last day of the month).

To accomplish this, the client should set the organization and the time range parameters appropriately, and leave the other parameters as null.

Pagination

You can define pagination parameters to limit the number of records that the Cisco TelePresence Exchange System returns at a time to the API client to adapt to a web display or a client buffer.

For example, to limit the system to return only 100 records per response to the API client, you would set the numberOfRecords parameter to 100 and set the firstIndex to the following sequence:

firstIndex = 0 for the first group of records, 100 for the second group of records, 200 for the third group of records, and so on for each subsequent group of records.

As long as the Cisco TelePresence Exchange System returns the 100 records in the response as the API client expects, the client will request the next portion of records. Once the system returns less than 100 records in the response, then the client can assume it has received the last block of records and no more requests are necessary.

Retrieving CDR Records

The CDR API provides methods for retrieving call detail records that are stored on the
Cisco TelePresence Exchange System. The methods are described in the following sections:

- Call Type Element, page 2-3
- getCallDetailRecordsCount, page 2-4
- getCallDetailRecords, page 2-5
- purgeCallDetailRecords, page 2-10

Call Type Element

Several of the CDR API service requests and responses include a call type element, which is described
in Table 2-1.

Table 2-1   Call Type Element

Parameter	Type	Description
callType	String	The call type field contains one of the following string values: • UNKNOWN—Call type is unknown. The Unknown field value is typically not used as a request filtering parameter. To receive all call types in the response, the client must set the callType filter parameter to null. • MEETME—Meet-Me call leg for a CTS end point. • DIRECTDIAL—Direct Dial • INTERSP_INCOMING—Call originates from an endpoint on a remote service provider and connects to a meeting on this Cisco TelePresence Exchange System. • INTERSP_OUTGOING—Call originates from an endpoint associated with a service provider on this Cisco TelePresence Exchange System and connects to an external meeting hosted by another service provider whose service might not be on a Cisco TelePresence Exchange System. • TPS_DIALOUT—Interop leg of a Meet-Me call that is handled by the 8710.

companyScope Element

Several of the CDR API service requests and responses include a Company Scope element, which is described in Table 2-2.

Table 2-2   Company Scope Element

Parameter	Type	Description
companyScope	String	companyScope is only relevant for the DIRECTDIAL callType. The companyScope field contains one of the following string values: • INTRA_COMPANY—Returns intra-company direct dial calls that reside on the Unified CM. • INTER_COMPANY—Returns all inter-company direct dial calls.

getCallDetailRecordsCount

The Get Call Detail Records Count service returns the number of call records that match the filtering criteria that are specified in the request message. You can use this information to adjust the criteria before requesting the actual call records.

The service request includes a Get Call Detail Records Count element. Table 2-3 describes the parameters in a Get Call Detail Records Count request. For each parameter that is set to null, the client ignores the criteria.

Table 2-3   Get Call Detail Records Count Request

Parameter	Type	Description
startTimeFrom	String	(Optional) Selects a call record if the start time of the call (in the call record) is equal to or later than the time specified in this parameter.
startTimeTo	String	(Optional) Selects a call record if the start time of the call (in the call record) is earlier than the time specified in this parameter.
endTimeFrom	String	(Optional) Selects a call record if the end time of the call (in the call record) is equal to or later than the time specified in this parameter.
endTimeTo	String	(Optional) Selects a call record if the end time of the call (in the call record) is earlier than the time specified in this parameter.
serviceProvider	String	(Optional) Specifies the service provider name. The service provider name in the records to be retrieved must match this name exactly.
organization	String	(Optional) Specifies the organization name. The organization name in the records to be retrieved must match this name exactly.
callType	String	(Optional) Selects a call record if the call type field in the record matches the specified value. The call type values are described in Table 2-1.

The service returns a Get Call Detail Records Count Result in the service response. Table 2-4 describes the elements in the Get Call Detail Records Result.

Table 2-4   *Get Call Details Records Count Result*

Parameter	Type	Description
totalNumberFound	Integer	The total number of records returned. The value is zero if the filter criteria did not match any call records.

getCallDetailRecords

The Get Call Detail Records service returns a list of records that meet the criteria that are supplied in the request. Table 2-5 describes the parameters in the service request.

Table 2-5   *Get Call Detail Records element*

Parameter	Type	Description
startTimeFrom	String	(Optional) Selects call records for which the start time of the call is equal to or later than the time specified in this parameter.
startTimeTo	String	(Optional) Selects call records for which the start time of the call is earlier than the time specified in this parameter.
endTimeFrom	String	(Optional) Selects call records for which the end time of the call is is equal to or later than the time specified in this parameter.
endTimeTo	String	(Optional) Selects call records for which the end time of the call is earlier than the time specified in this parameter.
meetingID	String	(Optional) Specifies the meeting identifier. All records associated with this meeting id are retrieved.
serviceProvider	String	(Optional) Specifies the service provider name. The service provider name in the records to be retrieved must match this name exactly.
organization	String	(Optional) Specifies the organization name. The organization name in the records to be retrieved must match this name exactly.
callType	String	(Optional) You can specify the call type of the records to be retrieved. Table 2-1 describes the call type values.
companyScope	String	(Optional) Selects a call record if the company scope field in the record matches the specified value. Table 2-2 describes the company scope combined value.

Table 2-5   *Get Call Detail Records element (continued)*

Parameter	Type	Description
firstIndex	Integer	(Optional) The index value of the first call record within the response message. Pagination uses this value. **Note** For details on managing how many records the Cisco TelePresence Exchange System returns to the API client, refer to Pagination, page 2-2.
numberOfRecords	Integer	(Optional) The maximum number of call records that will be included in the response message. **Note** For details on managing how many records the Cisco TelePresence Exchange System returns to the API client, refer to Pagination, page 2-2.

The service returns a Get Call Detail Records Result in the service response. Table 2-6 describes the Get Call Detail Records Result.

Table 2-6   *Get Call Details Records Result*

Parameter	Type	Description
callDetailRecords	Complex	List of apiCallDetailRecord elements. See Table 2-7 for a description of apiCallDetailRecord.
totalNumberFound	Integer	The total number of records returned. The value is zero if the query did not match any rooms.

Table 2-7 describes the apiCallDetailRecord element.

Table 2-7   *apiCallDetailRecord Element*

Parameter	Type	Description
callNetwork	String	Name of the network.
callType	String	The call type in the record. The call type values are described in Table 2-1.
callee	String	E.164 number of the called party.
calleeAlternateIdentities	String	Alternate identifier for the called party, such as an IP address.
calleeRegion	String	Region of the called party.
calleeOrganization	String	Organization of the called party.
calleeServiceProvider	String	Service provider of the called party.
calleeType	Integer	Type of the called party. This field always has the value E.164 number.
caller	String	E.164 number of the calling party.
callerAlternateIdentities	String	Alternate identifier for the calling party, such as an IP address.
callerRegion	String	Region of the calling party.

Table 2-7   apiCallDetailRecord Element (continued)

Parameter	Type	Description
callerOrganization	String	Organization of the calling party.
callerServiceProvider	String	Service provider of the calling party.
callerType	Integer	Type of the calling party. This field always has the value E.164 number.
cdrRecordType	Integer	Value of zero (0) indicates that the record relates to a call. The client does not support any other values in this release.
conferenceParticipantDisconnectCode	Integer	Numerical value of 1 to 8. See Table 2-8 for a description of the parameters that correspond to the numerical values of 1 to 8.
conferenceParticipantJoinTime	Integer	Time that the participant joins the meeting. Format of the time is in ISO8601 format.
conferenceParticipantReason	Integer	Additional disconnect information when available.
conferenceParticipantResourceID	Integer	Concatenation of the resource name and IP address of the Cisco TelePresence Multipoint Switch or Cisco MSE 8000 Series system involved in the meeting.
disconnectCauseCode	Integer	Q.850 or SIP cause code.
disconnectCauseStr	String	Text description of the disconnect cause.
disconnectData	String	Additional information to describe the disconnect cause.
duration	float	Call duration.
endTime	String	End time of the call.
guid	String	Unique identifier for a call. The CDR for each call leg contains the same GUID.
id	String	Unique identifier for CDR in the Cisco TelePresence Exchange System database.
meetingID	String	Unique identifier for the meeting. Number that the user dials from the endpoint keypad to access the meeting after dialing the main access number.
meetingKey	String	Unique key that the system database uses to access this meeting. Scheduling API methods such as getMeeting, modifyMeeting, and cancelMeeting require the meetingKey as a parameter.
requiredCapacity	Integer	Refers to the number of ports that the Cisco TelePresence Exchange System reserves for an endpoint. For details on the number of segments that are reserved for the endpoint, refer to the Endpoint Capacity appendix in the *Installation and Administration Guide for the Cisco TelePresence Exchange System*.
sdp	String	The contents of the last session description protocol (SDP) message.
serverIP	String	IP address of the call engine.
serverName	String	Hostname of the call engine that the administrator assigns during installation.

Table 2-7   apiCallDetailRecord Element (continued)

Parameter	Type	Description
startTime	String	Start time of the call.
videoBandwidth	String	Video bandwidth initially negotiated for the call.

Table 2-8   conferenceParticipantDisconnectCode element

Value	Parameter	Description
1	DISCONNECT_CODE_NORMAL	Indicates that the incoming leg is in a hung state.
2	DISCONNECT_CODE_INVITE_REJECT	Indicates that rejects the INVITE to CTMS.
3	DISCONNECT_CODE_INVITE_TIMEOUT	Indicates that the INVITE to CTMS has timed out.
4	DISCONNECT_CODE_CTMS_HANGUP	Indicates that the outgoing leg to CTMS is in a hung state.
5	DISCONNECT_CODE_MEETING_END	Indicates that the meeting ends with a participant connected to the call.
6	DISCONNECT_CODE_DUPLICATE_CALL	Indicates that the caller is already connected to another meeting.
7	DISCONNECT_CODE_IXL_POLICY_REJECT	Indicates that the caller was rejected because of its presence on a blacklist.
8	DISCONNECT_CODE_RESOURCE_OFFLINE	Indicates that the bridge resource is offline.

Example

The following elements that display in a CDR will vary depending on the type of call.

```
<callDetailRecords>
                <callNetwork>tp</callNetwork>
                <callType>MEETME</callType>
                <callee>12826338661</callee>
                <calleeAlternateIdentities>10.22.143.156</calleeAlternateIdentities>
                <calleeOrganization>ATT</calleeOrganization>
                <calleeRegion>San Francisco</calleeRegion>
                <calleeServiceProvider>ATT</calleeServiceProvider>
                <calleeType>1</calleeType>
                <caller>17652468107</caller>
                <callerAlternateIdentities>10.22.162.60</callerAlternateIdentities>
                <callerOrganization>HostedX</callerOrganization>
                <callerRegion>San Francisco</callerRegion>
                <callerServiceProvider>ATT</callerServiceProvider>
                <callerType>1</callerType>
                <cdrRecordType>0</cdrRecordType>
              <conferenceParticipantDisconnectCode>5</conferenceParticipantDisconnectCode>
                <conferenceParticipantJoinTime>2011-02-15T00:16:52-08:00</
conferenceParticipantJoinTime>
                <conferenceParticipantResourceID>sol2-ctx2-TPS1:10.22.162.4</
conferenceParticipantResourceID>
                <disconnectCauseCode>0</disconnectCauseCode>
                <disconnectCauseStr>Call Completed</disconnectCauseStr>
                <disconnectData>n/a</disconnectData>
                <duration>787.747</duration>
                <endTime>2011-02-15T00:30:00.000-08:00</endTime>
                <guid>F9951C6CF8A-878D5D42E70-7DB20445267-BF249B176A0</guid>
                <id>8a960f1a2dbf4c40012e26b948b70dc5</id>
                <meetingID>95436111</meetingID>
                <sdp>v=0
o=CODIAN 1297729099 1297729099 IN IP4 10.22.162.4
s=-
i=TANDBERG Telepresence Server 8710 v2.1(1.35)
c=IN IP4 10.22.162.4
b=TIAS:2250000
t=0 0
m=audio 58248 RTP/AVP 96 0 101
a=rtpmap:96 mpeg4-generic/48000
a=fmtp:96
profile-level-id=16;streamtype=5;config=B98C00;mode=AAC-hbr;sizeLength=13;indexLength=3;in
dexDeltaLength=3;constantDuration=480
a=rtpmap:0 PCMU/8000/1
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15
a=sendrecv
m=video 54402 RTP/AVP 112
b=TIAS:2250000
a=rtpmap:112 H264/90000
a=fmtp:112 profile-level-id=42e016;max-mbps=108000;max-fs=3600;packetization-mode=1
a=sendrecv
m=video 57006 RTP/AVP 112
a=rtpmap:112 H264/90000
a=fmtp:112 profile-level-id=42e016;max-mbps=27000;max-fs=3600
a=sendrecv
a=content:slides
a=label:12</sdp>
                <serverIP>10.22.143.156</serverIP>
                <serverName>sol2-ctx2-engine1</serverName>
                <startTime>2011-04-15T00:16:52.000-08:00</startTime>
                <videoBandwidth>4000000</videoBandwidth>
```

purgeCallDetailRecords

The Purge Call Detail Records service deletes the set of records that are specified by the criteria in the request and returns the number of call records that were deleted.

Table 2-9 describes the Purge Call Detail Records elements.

Table 2-9   Purge Call Detail Records Count element

Parameter	Type	Description
startTimeFrom	String	(Optional) Selects call records for which the start time of the call is equal to or later than the time specified in this parameter.
startTimeTo	String	(Optional) Selects call records for which the start time of the call is earlier than the time specified in this parameter.
endTimeFrom	String	(Optional) Selects call records for which the end time of the call is equal to or later than the time specified in this parameter.
endTimeTo	String	(Optional) Selects call records for which the end time of the call is earlier than the time specified in this parameter.
serviceProvider	String	(Optional) Specifies the service provider name. The service provider name in the records to be retrieved must match this name exactly.
organization	String	(Optional) Specifies the organization name. The organization name in the records to be retrieved must match this name exactly.
callType	Integer	(Optional) You can specify the call type of the records to be retrieved. The call type values are described in Table 2-1.

Table 2-10 describes the elements in the Get Call Detail Records result.

Table 2-10   Purge Call Details Records Result

Parameter	Type	Description
totalNumberPurged	Integer	The total number of records that were deleted. The value is zero if the query did not match any call records.

Performing API-related Tasks

echo

The Echo service is designed to confirm that the CDR API service is active. The client includes an arbitrary string in the echo request and the response message includes the same string.

Table 2-11 describes the input parameters for the Echo service request.

Table 2-11   Echo Request Parameters

Parameter	Type	Description
echoString	String	(Required) Enter an arbitrary string. The same string is returned in the response message. **Note** The Cisco TelePresence Exchange System throws an exception when this value is missing.

Table 2-12 describes the parameters in the Echo service response.

Table 2-12   Echo Response Parameters

Parameter	Type	Description
return	String	The value of the string is identical to the string sent in the request message.

getVersion

The Get Version service returns the version of the CDR API. The service request contains no input parameters.

Table 2-13 describes the parameters in the service response.

Table 2-13   Get Version Response Parameters

Parameter	Type	Description
return	String	The string contains the version of the CDR API.

Error Handling

The Cisco TelePresence Exchange System API communicates an error condition to the client by returning a SOAP fault message. The fault message contains an APICdrexception, which is described in Table 2-14.

Table 2-14   API Scheduling Exception

Parameter	Type	Description
erc	String	Exception return code, as described in Table 2-15.
message	String	The text message provides additional information about the exception. The content of the message varies depending on the exception code.

Table 2-15 describes the scheduling exception values.

Table 2-15   *Scheduling Exception Values*

Exception Value	Description
ERC_EXCEPTION	General exception. See the message element for more information about the exception.
ERC_MISSING_PARAMETER	One or more of the required parameters is missing.
ERC_INVALID_VALUE	One or more of the supplied parameters is invalid. The message text lists the invalid parameters.
ERC_INVALID_DATE_TIME	The supplied date/time string is not valid.
ERC_SERVICE_PROVIDER_NOT_FOUND	Invalid service provider name was specified in the request.
ERC_ORGANIZATION_NOT_FOUND	Invalid organization name was specified in the request.

C H A P T E R 3

Scheduling API

Revised: April 1, 2011

The Cisco TelePresence Exchange System provides the Scheduling Application Programming Interface (API) to facilitate the development of scheduling portals and other software applications.

This chapter provides a description of the Scheduling API and includes the following sections:

Getting Started

This section describes how to get started with the Scheduling API and includes the following topics:

Scheduling API Overview

The Scheduling API provides services to accomplish the following types of task:

- Obtain configured information

  The API provides a selection of Get methods to obtain information about the regions, organizations, and endpoints that are configured on the Cisco TelePresence Exchange System. These methods are described in the Obtaining Configured Information, page 3-5.

- Schedule and manage meetings

  The API provides methods to schedule new meetings, modify existing meetings, and cancel meetings. For more details refer to the Scheduling and Managing Meetings, page 3-10.

- Perform tasks that are related to the API

    The API provides services that are related to managing the Scheduling API. These methods are described in the Performing API-related Tasks, page 3-23.

Information Model

The API uses a number of information elements. These elements are described in the following sections:

Service Provider

A service provider offers telepresence services to a set of business customers (organizations) by using media resources that are provisioned at one or more regions in their network.

The Cisco TelePresence Exchange System provides the ability to customize the service greetings and IVR prompts for each service provider.

Region

A region represents a major geographic region in which a service provider operates.

The region contains one or more resource clusters which generally include either a Cisco TelePresence Multipoint Switch and/or Cisco TelePresence MSE 8000 Series, Cisco router with integrated voice response (IVR) records, and a Session Border Controller (SBC). A resource cluster is a connected set of resources in one physical data center and is also known as a point of presence (POP).

All media resources in a region are considered to be equivalent for resource allocation purposes, even if the resources span multiple POPs.

All media resources in a region are dedicated to one service provider.

A service provider might have multiple regions configured on a Cisco TelePresence Exchange System.

Organization

An organization is a business customer that is served by a service provider. An organization controls one or more telepresence rooms (also known as endpoints) that can be included in a meeting. An organization can choose hosted endpoint service or enterprise endpoint service.

With hosted endpoint service, the service provider operates the telepresence service on behalf of the business customer. Endpoints are managed by a Cisco TelePresence Manager owned by the service provider.

With enterprise endpoint service, the enterprise organization operates their conferencing services and the service provider provides inter-company connectivity. Enterprise endpoints are managed by a Cisco TelePresence Manager owned by the organization. One-Button-to-Push (OBTP) functionality, which provides easy access to meetings, is not supported for enterprise endpoint service.

Organization Ports Management

Organization ports management allows each organization to control the amount of organization bandwidth that is consumed by telepresence traffic on the network between the organization and the Cisco TelePresence Exchange System.

You specify the maximum number of ports when you configure an organization. The units are segments (screens). The ports required for each endpoint are specified in the endpoint table. You must specify the ports that are required by endpoints when you schedule the meeting.

When the system schedules a meeting, the port requirement for each organization is calculated (based on their endpoints that are included in the meeting). If the total port capacity for the organization (for all meetings that are scheduled in this time slot) exceeds the maximum value, the system rejects the attempt to schedule this meeting.

Endpoint Types

The Cisco TelePresence Exchange System provides telepresence services for Cisco TelePresence System (CTS) endpoints and non-CTS endpoints. Non-CTS endpoints, called interop endpoints, include single and three screen endpoints and select third-party single-screen endpoints that are standards-based (H.323, ISDN).

The Cisco TelePresence Exchange System supports the following types of endpoints:

- Provisioned endpoints—Endpoints in which all configuration details (such as name, phone number, number of screens, and organization) are known by the administrator and configured on the Cisco TelePresence Exchange System. Meet-Me and direct dial calls are placed on provisioned endpoints.

- Unprovisioned endpoints—Endpoint in which none of the configuration details are known by the administrator except the name of the meeting scheduler for that endpoint. Through the administration console you can reserve bandwidth for unprovisioned endpoints on the service provider network. This allows the endpoint to connect with other known endpoints within the network that are scheduled for the same meeting. This capability is useful for intercompany meetings.

- Remote endpoints—Endpoint for which no configuration details are known. Remote endpoints are endpoints (often CTS endpoints) that join the meeting from another service provider network. Configuring a remote endpoint on the Cisco TelePresence Exchange System, reserves capacity for the endpoint on the service provider network on which it is resident. The Cisco TelePresence Exchange system automatically determines and reserves the capacity to support these interprovider meetings.

> **Note**   Organization port management does not manage remote endpoints.

The API also distinguishes the following endpoint types:

- CTS—Cisco Telepresence System endpoints.

- INTEROP—Standards-based (H.323, ISDN) endpoints that can interoperate with the Cisco TelePresence Exchange System.

Endpoint Capacity

Three factors determine how many segments the Cisco TelePresence Exchange System reserves for an endpoint: the bridge type which handles the call (Cisco TelePresence Multipoint Switch or Cisco TelePresence MSE 8000 Series), the type of call (dial in or dial out), and the number of endpoint screens. For more details on endpoint capacity calculation, refer to the Endpoint Capacity appendix of the *Installation and Administration Guide for the Cisco TelePresence Exchange System* on Cisco.com.

Meeting Types

Each meeting is associated with a service provider and a region. All media resources for the meeting will be allocated from the specified region, even if some participants are from a another region or a different service provider. You must specify the region when you schedule the meeting.

The Cisco TelePresence Exchange System supports the following types of meetings:

- Meet-Me Meeting

  A Meet-Me meeting refers to a Meet-Me service meeting that is hosted by this Cisco TelePresence Exchange System. The system reserves and allocates media resources for all of the endpoints in the meeting and provides OBTP functionality to the provisioned endpoints. The system also reserves bandwidth for the meeting (for organizations that are using the bandwidth management feature).

- Remote meeting

  A remote meeting is a Meet-Me service meeting that is hosted by a remote Cisco TelePresence Exchange System. The Cisco TelePresence Exchange System does not reserve any media resources for a remote meeting. You schedule remote meetings to provide OBTP functionality in the provisioned endpoints and to reserve the ports.

- Scheduled two-party direct

  A scheduled two-party direct meeting is a scheduled direct dialed meeting between two Hosted provisioned endpoints. The Cisco TelePresence Exchange System does not reserve any media resources for a direct dialed meeting. Two-party direct meetings are scheduled to provide OBTP functionality for those endpoints within the same organization.

Obtaining the WSDL

You can access the WSDL file for the Scheduling API at the following URL:

http://<*DNS name or IP address for your admin server*>:8080/ctxapi/api/sched?wsdl

The WSDL file provides a complete and accurate definition of the API that is supported by your Cisco TelePresence Exchange System. In the event of any discrepancies between the WSDL file and this document, you should follow the WSDL file definition.

Key Name Maps

The Scheduling API assigns a unique identifier (called a key) to each service provider, organization, region, endpoint and meeting.

When the API responds to Get requests, each item in the response is represented as a pair of values called a key name map. A key name map contains the item key and a text string that contains the name of the item.

Key name maps are provided as a convenience for the API user. The name string provides a human-readable identifier for the item (for use in a display or a report). The key provides a unique identifier for the item. You use the key in subsequent API requests to ensure that the service selects the correct item.

Table 3-1 describes the fields in a key map.

Table 3-1   Key Map Fields

Parameter	Type	Description
key	String	Unique identifier. The key is an alpha-numeric string of 32 characters.
name	String	Refers to the exact name of the provisioned entity within the Cisco TelePresence Exchange System.

Obtaining Configured Information

The Scheduling API provides methods for retrieving configured information about endpoints, regions and organizations that are configured on the Cisco TelePresence Exchange System. The methods are described in the following sections:

getEndpoints

The Get Endpoints service returns a list of endpoints that meet the criteria that are supplied in the request. Table 3-2 describes the parameters in the service request.

Table 3-2   Get Endpoints Request

Parameter	Type	Description
queryString	String	(Optional) Enter a query to select the desired set of endpoints. For information about building queries, see the Query Syntax, page 3-30.
endpointType	String	(Optional) Specifies the endpoint type for the service to return. You can enter one of the following values: CTS—Cisco Telepresence System endpoints. INTEROP—Standards-based (H.323, ISDN) endpoints that can interoperate with the Cisco TelePresence Exchange System. **Note** The system ignores the endpointType parameter if you enter a null string.

The service returns a Get Endpoints Result in the service response. Table 3-3 describes the Get Endpoints Result.

Table 3-3   Get Endpoints Result

Parameter	Type	Description
endpoints	Complex	List of apiEndpoints. See Table 3-4 for a description of apiEndpoint.
totalNumberFound	Integer	Returns the total number of records that are found and returned in the query. The value is zero if the query did not match any endpoints.

Table 3-4 describes the apiEndpoint element.

Table 3-4   apiEndpoint Element

Parameter	Type	Description
isCts	Boolean	Returns true if it is a Cisco TelePresence endpoint.
keyNameMap	keyNameMap	Contains a key, which is a unique identifier for the endpoint, and the corresponding endpoint name. See Table 3-1 for the keyNameMap fields.
number	number	Provides the directory number for the endpoint.
supportOBTP	Boolean	Indicates that the endpoint supports OBTP functionality.

Example

The following example shows how to get the list of endpoints that meet a complex query. The API will include an endpoint in the response if the endpoint name starts with the letters *test*, the endpoint capacity is less than one, and the endpoint is synchronized with the Cisco TelePresence Manager:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:sch="http://sched.api.ctx.txbu.cisco.com">
   <soapenv:Header/>
   <soapenv:Body>
```

```
            <sch:getEndpoints>
                <queryString>(AND (roomName sw test) (capacity lt 1) (isSynchronized eq
true))</queryString>
            </sch:getEndpoints>
        </soapenv:Body>
</soapenv:Envelope>
```

getEndpointsForOrganization

The Get Endpoints for Organization service returns a list of endpoints that are defined for the specified organization. An endpoint is active if it has been associated with an organization and is configured as available for scheduling (in the administration console Endpoints table).

Table 3-5 describes the parameters for the service request.

Table 3-5   Get Endpoints for Organization Request

Parameter	Type	Description
serviceProviderKey	String	(Required) Enter the key of the service provider that is associated with the organization.
organizationKey	String	(Required) Enter the key of the organization.
endpointType	String	(Optional) Specifies the endpoint type for the service to return. You can enter one of the following values: CTS—Cisco Telepresence System endpoints. INTEROP—Standards-based H.323 and ISDN endpoints that can interoperate with the Cisco TelePresence Exchange System. **Note** The system ignores the endpointType parameter if you enter a null string.

The service response contains a Get Endpoints Result. The Get Endpoints Result is described in Table 3-3.

getRegions

The Get Regions service returns a list of regions that meet the query criteria that are supplied in the request. Table 3-6 describes the parameters for the service request.

Table 3-6   Get Regions Request

Parameter	Type	Description
queryString	String	(Optional) Enter a query to select the desired set of regions.

Table 3-7 describes the Get Regions service response.

Table 3-7   Get Regions Response

Parameter	Type	Description
regions	Complex	List of zero or more apiRegions. The apiRegion type is a key name map, which is described in Table 3-1. Each apiRegion provides the unique key and name of a region.
totalNumberFound	Integer	The total number of region records returned.

getRegionsForServiceProvider

The Get Regions for Service Provider service returns a list of regions that are configured for the specified service provider. Table 3-8 describes the parameters for the service request.

Table 3-8   Get Regions for Service Provider Request

Parameter	Type	Description
serviceProviderKey	String	(Required) Enter the key of the service provider that is associated with the region.
		Note The Cisco TelePresence Exchange System throws an exception when this value is missing.

The service response contains a Get Regions Result, which is described in Table 3-7.

getOrganizations

The Get Organizations service returns a list of all organizations that meet the criteria that are supplied in the request. Table 3-9 describes the parameters for the service request.

Table 3-9   Get Organizations Request

Parameter	Type	Description
queryString	String	(Optional) Enter a query to select the desired set of organizations. For information about building queries, see the Query Syntax, page 3-30.

Table 3-10 describes the parameters for the service response.

Table 3-10   Get Organizations Result

Parameter	Type	Description
organizations	Complex	List of zero or more apiOrganizations that meet the query criteria. The apiOrganization type is described in Table 3-11.
totalNumberFound	Integer	The total number of records returned.

Table 3-11 describes the apiOrganization type.

Table 3-11   apiOrganization Type

Parameter	Type	Description
keyNameMap	keyNameMap	Unique organization key and the corresponding text name. The key name map is described in Table 3-1.
maxPort	Integer	Maximum number of ports that can be scheduled for this organization.

getOrganizationsFor ServiceProvider

The Get Organizations for Service Provider service returns a list of organizations that are configured for the specified service provider. Table 3-12 describes the parameters for the service request.

Table 3-12   Get Organizations for Service Provider Request

Parameter	Type	Description
serviceProviderKey	String	(Required) Enter the unique key of the service provider.

The service response contains the Get Organizations Result element, which is described in Table 3-10.

getServiceProvider

The Get Service Providers service returns a list of service providers that meet the criteria that are supplied in the request. Table 3-13 describes the parameters for the service request.

Table 3-13   Get Service Providers Request

Parameter	Type	Description
queryString	String	(Optional) Enter a query string. For information about building queries, see the Query Syntax, page 3-30.

Table 3-14 describes the service response.

Table 3-14   Get Service Providers Response

Parameter	Type	Description
serviceProviders	Complex	List of apiServiceProviders. The apiServiceProvider type is a key name map, which is described in Table 3-1. Each apiServiceProvider provides the unique key and name of a service provider.
totalNumberFound	Integer	The total number of service provider records returned.

getPortsByOrganization

The Get Ports By Organization service returns the port bandwidth allocation for each organization (or for the specified organization). The information covers each 15-minute interval for the start time and duration that is specified in the request.

Table 3-15 describes the parameters for the service request.

Table 3-15   Get Ports by Organization Request

Parameter	Type	Description
organizationKey	String	(Required) Enter the unique key of the organization. Enter the null string to get information for all organizations.
dateTimeStr	Date/time string	(Required) Enter the starting date and time for the port allocation. The default value is the date and time that the server receives the request.
duration	Integer	(Required) Enter the duration for the port allocation. The service response will include a value for each 15-minute interval in the duration that is specified. The first interval starts at the starting time and date.

Table 3-16 describes the Get Ports by Organization response.

Table 3-16   Get Ports by Organization Response

Parameter	Type	Description
APIPortsList	Complex	List of apiPorts elements. For each organization (or the specified organization), the service returns one apiPorts element for each 15-minute interval in the requested duration.

Table 3-17 describes the apiPorts element.

Table 3-17   apiPorts Element

Parameter	Type	Description
date	Date/time string	Start date and time.
lane	String	Values are limited to CTS, ISDN, or IP.
organizationKey	String	Key value for the organization.
value	int	Bandwidth value.

Scheduling and Managing Meetings

The following sections describe the services for scheduling and managing meetings:

- scheduleMeeting, page 3-11
- scheduleRemoteMeeting, page 3-14

scheduleMeeting

The Schedule Meeting service creates a new Meet-Me meeting, based on the parameter values that are supplied in the request. The response includes a meeting key, which must be supplied in any subsequent request to view, modify or delete the meeting.

Table 3-18 describes the parameters for the service request.

Table 3-18   Schedule Meeting Request

Parameter	Type	Description
conferenceID	String	(Optional) If you provide a null string for this field, the system generates a unique conference ID for the meeting. If you provide a conference ID in this parameter, the system will use this value. **Note** If you provide conference IDs, you must provide a unique conference ID for each meeting.
auditID	String	(Optional) You can set this identifier to tag meetings (such as with categories). The auditID field is saved but not processed by the API.
schedulerEmail	String	(Optional) Enter the email address of the contact person for the meeting. The email address is displayed on the IP phone in the meeting room.
subject	String	(Required) Enter the subject of the meeting.
dateTimeStr	Date/time string	(Required) Enter the date and time for the start of the meeting.
duration	Integer	(Required) Enter the duration of the meeting in minutes.
serviceProviderKey	String	(Required) Enter the unique key of the service provider who will host the meeting.
regionKey	String	(Required) Enter the key of the region for the meeting. This region must be associated with the service provider.

Table 3-18   Schedule Meeting Request (continued)

Parameter	Type	Description
requireOBTP	Boolean	(Optional) Set to TRUE when you want to display OBTP information on the IP phone associated with the provisioned endpoint. Set to FALSE when you do not want to use OBTP for privacy reasons or when the Cisco TelePresence Manager is temporarily unavailable. When no value is set, a default of TRUE is set.
provisionedEndpointList	Complex	(Optional) Enter a list of apiProvisionedEndpoint elements. See Provisioned Endpoint Fields, page 3-22.
unprovisionedEndpointList	Complex	(Optional) Enter a list of apiUnprovisionedEndpoint elements. See Unprovisioned Endpoint Fields, page 3-23.
remoteEndpointList	Complex	(Optional) Enter a list of apiRemoteEndpoint elements. See Remote Endpoint Fields, page 3-23.
additionalCapacity	Integer	(Required) Enter the additional capacity to reserve for unprovisioned and remote endpoints in the meeting. Units are segments.
bridgeCapabilityList	Complex	Enter the bridge capabilities that are required for the meeting. Enter one of the following values: • SUPPORT_ANY_CTS • SUPPORT_SINGLESCREEN_INTEROP • SUPPORT_MULTISCREEN_INTEROP **Note** The system can infer the bridge requirements for provisioned endpoints. The bridge capability list is required to specify capabilities for unprovisioned and remote endpoints. **Note** When no provisioned endpoints are specified in the request, the bridgeCapabilityList parameter is required. When one or more endpoints are specified in thebridgeCapabilityList, this parameter is optional.
customLayout	Integer	(Optional) Enter a default value for the screen layout. For details on the layout values, refer to the Conference Layouts section, page 78, of the Cisco TelePresence MCU Remote Management API manual. **Note** When the conference is not hosted on a Cisco TelePresence MCU MSE 8510, the customLayout parameter is ignored.

Table 3-19 describes the Schedule Meeting result.

Table 3-19   *Schedule Meeting Result*

Parameter	Type	Description
accessNumber	Digit string	Number that the participants dial to join the meeting.
conferenceID	String	Conference ID for the participants to input when they join the meeting.
meetingKey	String	Unique meeting identifier, which must be supplied in any subsequent service request to view, modify or delete the meeting.
capacityAllocated	Integer	MTU capacity allocated for this meeting. Units are segments (screens).
bridgeResourceType	String	The type of media resource allocated for this meeting. Values include CTMS, TPS, and MSE8510.

The following example shows how to schedule a meeting:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:sch="http://sched.api.ctx.txbu.cisco.com">
   <soapenv:Header/>
   <soapenv:Body>
      <sch:scheduleMeeting>
         <auditID>audit</auditID>
         <schedulerEmail>user1@cisco.com</schedulerEmail>
         <subject>test</subject>
         <dateTimeStr>2011-04-19T06:00:00-07:00</dateTimeStr>
         <duration>15</duration>
         <serviceProviderKey>0a4fa39d9c2d11df98187da9da46d147</serviceProviderKey>
         <regionKey>09439bb29c2d11df98187da9da46d147</regionKey>
        <requireOBTP>true</requireOBTP>
       <provisionedEndpointList>
           <provisionedEndpoints>
              <endpointKey>00eb0d9b2b6007c7012b60207b8e01ba</endpointKey>
              <bandwidth>2</bandwidth>
              <dialOut>false</dialOut>
              <minimizeCapacity>false</minimizeCapacity>
           </provisionedEndpoints>
       </provisionedEndpointList>
       <unprovisionedEndpointList>
           <unprovisionedEndpoints>
              <bandwidth>4</bandwidth>
              <organizationKey>0b463c0b9c2d11df98187da9da46d147</organizationKey>
           </unprovisionedEndpoints>
       </unprovisionedEndpointList>
       <remoteEndpointList>
           <remoteEndpoints/>
       </remoteEndpointList>
       <additionalCapacity>8</additionalCapacity>
       <bridgeCapabilityList>
           <bridgeCapabilties>SUPPORT_ANY_CTS</bridgeCapabilties>
       </bridgeCapabilityList>
       <customLayout/>
</sch:scheduleMeeting>
   </soapenv:Body>
</soapenv:Envelope>
```

The following example shows the response to the Schedule Meeting request:

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
    <env:Header/>
    <env:Body>
        <ns2:scheduleMeetingResponse xmlns:ns2="http://sched.api.ctx.txbu.cisco.com">
            <return>
                <accessNumber>12345</accessNumber>
                <conferenceID>05195048</conferenceID>
                <meetingKey>00eb0da32a830ebc012a865fa8f9003a</meetingKey>
               <bridgeResourceType>CTMS</bridgeResourceType>
                <capacityAllocated>12</capacityAllocated>
            </return>
        </ns2:scheduleMeetingResponse>
    </env:Body>
</env:Envelope>
```

scheduleRemoteMeeting

The Schedule Remote Meeting service creates a new remote Meet-Me meeting based on the parameter values that are supplied in the request. The response includes a meeting key, which must be supplied in any subsequent request to view, modify or delete the meeting.

A remote meeting implies that another Cisco TelePresence Exchange System will schedule and manage the media resources for the meeting. No media resources are reserved on this Cisco TelePresence Exchange System for a remote meeting. You schedule remote meetings for the system to provide OBTP functionality for the local provisioned endpoints and to reserve bandwidth for the meeting (this is required for organizations that are using the bandwidth port management feature).

Table 3-20 describes the parameters for the Schedule Remote Meeting service request.

Table 3-20   Schedule Remote Meeting Request

Parameter	Type	Description
accessNumber	Digit string	(Required) Number that the participants dial to join the meeting.
conferenceID	String	(Required) Conference ID for the participants to input when they join the meeting.
schedulerEmail	String	(Optional) Enter the email address of the contact person for the meeting. The email address is displayed on the IP phone in the meeting room.
subject	String	(Required) Enter the subject of the meeting.
dateTimeStr	Date/time string	(Required) Enter the date and time for the start of the meeting.
duration	Integer	(Required) Enter the duration of the meeting in minutes.
serviceProviderKey	String	(Required) Enter the unique key of the service provider that hosts the meeting.
requireOBTP	Boolean	(Optional) Set to TRUE when you want to display OBTP information on the IP phone associated with the provisioned endpoint. Set to FALSE when you do not want to use OBTP for privacy reasons or when the Cisco TelePresence Manager is temporarily unavailable. When no value is set, a default of TRUE is set.

Table 3-20   *Schedule Remote Meeting Request (continued)*

Parameter	Type	Description
provisionedEndpointList	Complex	Enter a list of apiProvisionedEndpoint elements. See Provisioned Endpoint Fields, page 3-22. **Note** For this request, there must be at least one endpoint in either the provisioned or unprovisioned list.
unprovisionedEndpointList	Complex	Enter a list of apiUnprovisionedEndpoint elements. See Unprovisioned Endpoint Fields, page 3-23. **Note** For this request, there must be at least one endpoint in either the provisioned or unprovisioned list.

The service response contains a scheduleMeetingResult element, which is described in Table 3-19.

scheduleTwoPartyDirectMeeting

The Schedule Two Party Direct Meeting service creates a new direct meeting between two local provisioned endpoints within the same organization, by using the parameter values that are supplied in the request. The response includes a meeting key, which must be supplied in any subsequent request to view, modify or delete the meeting.

The Cisco TelePresence Exchange System does not reserve any media resources for a two party meeting. Two party meetings are scheduled to provide OBTP functionality for the endpoints.

Table 3-21 describes the parameters for the service request.

Table 3-21   *Schedule Two Party Meeting Request*

Parameter	Type	Description
schedulerEmail	String	(Optional) Enter the email address of the contact person for the meeting. The email address is displayed on the IP phone in the meeting room.
subject	String	(Required) Enter the subject of the meeting.
dateTimeStr	Date/time string	(Required) Enter the date and time for the start of the meeting.
duration	Integer	(Required) Enter the duration of the meeting in minutes.
serviceProviderKey	String	(Required) Enter the unique key of the service provider that hosts the meeting.
requireOBTP	Boolean	(Optional) Set to TRUE when you want to display OBTP information on the IP phone associated with the provisioned endpoint. Set to FALSE when you do not want to use OBTP for privacy reasons or when the Cisco TelePresence Manager is temporarily unavailable. When no value is set, a default of TRUE is set.

Table 3-21   Schedule Two Party Meeting Request (continued)

Parameter	Type	Description
provisionedEndpoint1	Complex	(Required) Enter a apiProvisionedEndpoint element. See Provisioned Endpoint Fields, page 3-22.
provisionedEndpoint2	Complex	(Required) Enter a apiProvisionedEndpoint element. See Provisioned Endpoint Fields, page 3-22.

The service response contains a scheduleMeetingResult element, which is described in Table 3-19.

modifyMeeting

The Modify Meeting service modifies the information for a meeting based on the parameter values that are supplied in the request. Null parameter values are set for fields that you do not want to change.

Meeting details cannot be modified after a meeting starts.

> **Note** The Modify Meeting service request must include the meeting key of the meeting that you want to modify.

> **Note** When modifying a meeting, the endpoint lists must be specified completely, even if there are no changes. A null value cannot be used to indicate that there are no changes to the endpoint lists.

Table 3-22 describes the parameters for the service request.

Table 3-22   Modify Meeting Request

Parameter	Type	Description
meetingKey	Integer	(Required) Enter the meeting key. The meeting key is the unique identifier of a specific meeting.
subject	String	(Optional) Enter the new subject of the meeting.
dateTimeStr	Date/time string	(Optional) Enter the new date and time for the start of the meeting.
duration	Integer	(Optional) Enter the new duration of the meeting in minutes.
regionKey	String	(Optional) Enter the unique region key for the meeting. This region must be associated with the service provider.
requireOBTP	Boolean	(Optional) Set to TRUE when you want to display OBTP information on the IP phone associated with the provisioned endpoint. Set to FALSE when you do not want to use OBTP for privacy reasons or when the Cisco TelePresence Manager is temporarily unavailable. When no value is set, a default of TRUE is set.

Table 3-22   *Modify Meeting Request (continued)*

Parameter	Type	Description
provisionedEndpointList	Complex	Enter a list of apiProvisionedEndpoint elements. See Provisioned Endpoint Fields, page 3-22. **Note** The provisionedEndpointList must be specified to retain the original endpoints. When a null or empty list is provided, it is interpreted that all endpoints are being removed.
unprovisionedEndpointList	Complex	Enter a list of apiUnprovisionedEndpoint elements. See Unprovisioned Endpoint Fields, page 3-23. **Note** The unprovisionedEndpointList must be specified to retain the original endpoints. When a null or empty list is provided, it is interpreted that all endpoints are being removed.
remoteEndpointList	Complex	Enter a list of apiRemoteEndpoint elements. See Remote Endpoint Fields, page 3-23. **Note** The remoteEndpointList must be specified to retain the original endpoints. When a null or empty list is provided, it is interpreted that all endpoints are being removed.
additionalCapacity	Integer	(Optional) Enter the additional capacity to reserve for unprovisioned and remote endpoints in the meeting. Units are segments.
bridgeCapabilityList	Complex	(Optional) Enter the bridge capabilities that are required for the meeting. Enter one of the following values: • SUPPORT_ANY_CTS • SUPPORT_SINGLESCREEN_INTEROP • SUPPORT_SINGLESCREEN_INTEROP
customLayout	Integer	(Optional) Enter a default value for the screen layout. For details on the layout values, refer to the Conference Layouts section, page 78, of the Cisco TelePresence MCU Remote Management API manual.

Table 3-23 describes the Modify Meeting result.

Table 3-23   *Modify Meeting Result.*

Parameter	Type	Description
capacityAllocated	Integer	MTU capacity allocated for this meeting. Units are segments (screens).
bridgeResourceType	String	The type of media resource allocated for this meeting. Values include CTMS, TPS, and MSE8510.

modifyRemoteMeeting

The Modify Remote Meeting service modifies the information for a remote meeting based on the parameter values that are supplied in the request. Set null parameter values in the request for fields that you are not changing.

Note The Modify Remote Meeting service request must include the meeting key of the meeting to be modified.

Note When modifying a remote meeting, the endpoint lists must be specified completely, even if there are no changes. A null value cannot be used to indicate that there are no changes to the endpoint lists.

Table 3-24 describes the parameters for the Modify Remote Meeting request.

Table 3-24   Modify Remote Meeting Request

Parameter	Type	Description
meetingKey	String	(Required) Enter the meeting key, which is the unique identifier of a specific meeting.
accessNumber	String	(Optional) Enter the number that the participants dial to join the meeting.
conferenceID	String	(Optional) Enter the conference ID for the participants to input when they join the meeting.
subject	String	(Optional) Enter the subject of the meeting.
dateTimeStr	Date/time string	(Optional) Enter the date and time for the start of the meeting.
duration	Integer	(Optional) Enter the duration of the meeting in minutes.
requireOBTP	Boolean	(Optional) Set to TRUE when you want to display OBTP information on the IP phone associated with the provisioned endpoint. Set to FALSE when you do not want to use OBTP for privacy reasons or when the Cisco TelePresence Manager is temporarily unavailable. When no value is set, a default of TRUE is set.
provisionedEndpointList	Complex	Enter a list of apiProvisionedEndpoint elements. See Provisioned Endpoint Fields, page 3-22. **Note** The provisionedEndpointList must be specified to retain the original endpoints. When a null or empty list is provided, it is interpreted that all endpoints are being removed.
unprovisionedEndpointList	Complex	Enter a list of apiUnprovisionedEndpoint elements. See Unprovisioned Endpoint Fields, page 3-23. **Note** The unprovisionedEndpointList must be specified to retain the original endpoints. When a null or empty list is provided, it is interpreted that all endpoints are being removed.

No parameters are returned in the Modify Remote Meeting service response.

modifyTwoPartyDirectMeeting

The Modify Two Party Direct Meeting service modifies the information for a two party meeting based on the parameter values that are supplied in the request. Set null parameter values in the request for fields that you are not changing.

Note   The Modify Two Party Direct Meeting service request must include the meeting key of the meeting that you want to modify.

Note   When modifying a two-party direct meeting, either both of the endpoints need to be specified or both of the endpoints need to be set to null to indicate no changes.

Table 3-25 describes the parameters for the Modify Two Party Direct Meeting request.

Table 3-25   Modify Two Party Meeting Request

Parameter	Type	Description
meetingKey	String	(Required) Enter the meeting key, which is the unique identifier of a specific meeting.
subject	String	(Optional) Enter the new subject of the meeting.
dateTimeStr	Date/time string	(Optional) Enter the new date and time for the start of the meeting.
duration	Integer	(Optional) Enter the new duration of the meeting in minutes.
requireOBTP	Boolean	(Optional) Set to TRUE if you want to display OBTP information on the IP phone associated with the provisioned endpoints. Set to FALSE when you do not want to use OBTP for privacy reasons or when the Cisco TelePresence Manager is temporarily unavailable. When no value is set, a default of TRUE is set.
provisionedEndpoint1	Complex	Enter an apiProvisionedEndpoint element. See Provisioned Endpoint Fields, page 3-22. **Note** Either both the provisionedEndpoint1 and the provisionedEndpoint2 parameters must change or both parameters must be set to null to indicate no change.
provisionedEndpoint2	Complex	Enter a apiProvisionedEndpoint element. See Provisioned Endpoint Fields, page 3-22. **Note** Either both the provisionedEndpoint1 and the provisionedEndpoint2 parameters must change or both parameters must be set to null to indicate no change.

No parameters are returned in the Modify Two Party Direct Meeting service response.

cancelMeeting

This service cancels a scheduled meeting. The service request must include the meeting key of the meeting that you want to cancel.

Table 3-26   Cancel Meeting Request Parameters

Parameter	Type	Description
meetingKey	Integer	(Required) Enter the meeting key, which is the unique identifier of a specific meeting.
cancelOBTP	Boolean	(Optional) Set to true if you want to remove the OBTP entry from the IP phones in the rooms.

The Cancel Meeting service request has no response.

getMeeting

The service returns the details for the meeting that are specified by the meeting key that is supplied in the request.

Table 3-27 describes the fields in the Get Meeting request.

Table 3-27   Get Meeting Request Parameters

Parameter	Type	Description
meetingKey	Integer	(Required) Enter the meeting key, which is the unique identifier of a specific meeting.

The Get Meeting Response returns a list of apiMeeting elements. Table 3-28 describes the apiMeeting element.

Table 3-28   apiMeeting Element

Parameter	Type	Description
accessNumber	String	The number that the participants dial to join the meeting.
conferenceId	String	The conference ID for the participants to input when they join the meeting.
dateTimeStr	Date/time string	The date and time for the start of the meeting.
duration	Integer	The duration of the meeting in minutes.
isCancelled	Boolean	This element is set to TRUE if the meeting is cancelled.
isRemote	Boolean	This element is set to TRUE if the meeting is remote.
meetingKey	Integer	The meeting key is a unique identifier of a specific meeting.
provisionedEndpointList	Complex	List of apiProvisionedEndpoint elements.See Unprovisioned Endpoint Fields, page 3-23.

Table 3-28   apiMeeting Element (continued)

Parameter	Type	Description
remoteEndpointList	Complex	List of apiRemoteEndpoint elements. See Remote Endpoint Fields, page 3-23.
subject	String	Subject of the meeting.
unprovisionedEndpointList	Complex	List of apiUnprovisionedEndpoint elements. See Provisioned Endpoint Fields, page 3-22.

checkPorts

The service queries availability of sufficient organization port bandwidth for the specified meeting.

Table 3-29   Check Port Request

Parameter	Type	Description
meetingKey	Integer	(Required) Enter the meeting key, which is the unique identifier of a specific meeting.
dateTimeStr	Date/time string	(Required) Enter the date and time of the start of the meeting.
duration	Integer	(Required) Enter the duration of the meeting in minutes.
serviceProviderKey	String	(Required) Enter the unique key for the service provider.
provisionedEndpointList	Complex	(Required) Enter a list of the apiProvisionedEndpoint elements. See Provisioned Endpoint Fields, page 3-22.

Table 3-30 describes the Check Ports response.

Table 3-30   Check Ports Response

Parameter	Type	Description
free	Boolean	The boolean is set to true when organization port bandwidth is available for the entire duration that is specified in the request.

isEndpointFree

The service queries the availability of the specified endpoint during the duration between the specified start time and end time.

Table 3-31   Is Endpoint Free Request Parameters

Parameter	Type	Description
dateTimeStartStr	String	(Required) Start date and time for checking the endpoint availability.
dateTimeEndStr	String	(Required) End date and time for checking the endpoint availability.

Table 3-31   Is Endpoint Free Request Parameters

Parameter	Type	Description
serviceProviderKey	String	(Required) Enter the unique key for the service provider of the endpoint.
provisionedEndpoint	Complex	(Required) apiProvisionedEndpoint element. See Provisioned Endpoint Fields, page 3-22.

Table 3-32 describes the isEndpointsFreeResult service response.

Table 3-32   Is Endpoint Free Result

Parameter	Type	Description
free	Boolean	The boolean is set to true if the endpoint is available for the entire duration that is specified in the request.

Endpoint Elements

The XML definitions for endpoints are common to all requests and responses in the Scheduling API that contain endpoints. The fields in the endpoint element vary depending on the type of endpoint. The following sections describe the fields for each type of endpoint:

- Provisioned Endpoint Fields, page 3-22
- Unprovisioned Endpoint Fields, page 3-23
- Remote Endpoint Fields, page 3-23

Provisioned Endpoint Fields

Provisioned endpoints are managed by the service provider's Cisco TelePresence Manager. This enables the Cisco TelePresence Exchange System to offer OBTP functionality for provisioned endpoints.

Table 3-33 describes the provisioned endpoint element.

Table 3-33   Provisioned Element Fields

Parameter	Type	Description
ports	Integer	(Optional) The network bandwidth number for this endpoint. Units must be consistent with the maximum ports field that is configured for the organization.
dialOut	Boolean	(Optional) Indicates whether the system can dial out to this provisioned endpoint at the start of the meeting. The system dials out only to interop (standards-based H.323 and ISDN) endpoints. Therefore, this field must be set to false for CTS (SIP) endpoints, and set to TRUE for interop endpoints. The dialOut default value is FALSE.
endpointKey	String	(Required) The unique key of the endpoint.

Unprovisioned Endpoint Fields

Unprovisioned endpoints are not hosted by the service provider, so the Cisco TelePresence Exchange System does not provide OBTP functionality for these endpoints.

Table 3-34 describes the unprovisioned endpoint element.

Table 3-34   Unprovisioned Element Fields

Parameter	Type	Description
ports	Integer	(Optional) The network bandwidth number for this endpoint. Units must be consistent with the maximum bandwidth field that is configured for the organization.
organizationKey	String	(Required) The unique key of the organization that is associated with this endpoint.
		New fields are dialOut, number, and protocol. The dialOut parameter is same as above. The number parameter is the guest outdial number, i.e. if this is a guest outdial. The protocol parameter is the guest outdial protocol, either ISDN or H323. For non-guest-outdials, these three parameters can be left unspecified.
dialOut	Boolean	(Optional) Indicates whether the system should dial out to this provisioned endpoint at the start of the meeting. Currently, the system dials out only to interop endpoints. Therefore, this field must be set to FALSE for CTS endpoints, and set to TRUE for interop endpoints. The dialOut default value is FALSE.
number	String	The E.164 number for the guest dial out participant. **Note** When the dialOut parameter has a value of TRUE, the number is required. Otherwise the number is ignored.
protocol	String	(Optional) The protocol for the guest outdial. Enter ISDN or H323.

Remote Endpoint Fields

Remote endpoints are not hosted by the service provider, so the Cisco TelePresence Exchange System does not provide OBTP functionality for remote endpoints. You do not need to specify any information to include a remote endpoint in a meeting.

Performing API-related Tasks

echo

The Echo service allows the system to confirm that the Scheduling API service is active. The client includes an arbitrary string in the echo request and the response message includes the same string.

Table 3-35 describes the input parameters for the Echo service request.

Table 3-35   Echo Request Parameters

Parameter	Type	Description
echoString	String	(Required) Enter an arbitrary string. The same string is returned in the response message.

Table 3-36 describes the parameters in the Echo service response.

Table 3-36   Echo Response Parameters

Parameter	Type	Description
return	String	The value of the string is identical to the string sent in the request message.

getVersion

The Get Version service returns the version of the Scheduling API. The service request contains no input parameters.

Table 3-37 describes the parameters in the service response.

Table 3-37   Get Version Response Parameters

Parameter	Type	Description
return	String	The value of the string is the version of the Scheduling API.

Error Handling

The Cisco TelePresence Exchange System API communicates an error condition to the client by returning a SOAP fault message. The fault message contains an API scheduling exception, which is described in Table 3-38.

Table 3-38   API Scheduling Exception

Parameter	Type	Description
erc	String	Exception return code.
cause code	String	(Optional) Provides more detailed information about an exception return code.
error map	Map	An optional map with name and value pairs that identify the parameter(s) that caused the exception.
message	String	English text message that provides additional information about the exception code. The content of the message varies depending on the exception code.

Table 3-39 describes the scheduling exception values.

Table 3-39   *Scheduling Exception Values*

Exception Value	Description or Cause Code
ERC_EXCEPTION	General exception. See the message element for more information about the exception.
ERC_MISSING_PARAMETER	One or more of the required parameters is missing.
ERC_INTERNAL_SCHEDULING_EXCEPTION	General scheduling failure. See the message element for more information about the exception.

Table 3-39   Scheduling Exception Values (continued)

Exception Value	Description or Cause Code
ERC_SCHEDULING_VALIDATION_EXCEPTION	At least one of the supplied parameters is invalid. See specific cause codes below:
	CANNOT_SCHEDULE_IN_PAST
	CTS_ENDPOINTS_MUST_NOT_USE_DIALOUT
	DUPLICATE_CONFERENCE_ID
	DUPLICATE_ENDPOINT
	DUPLICATE_GUEST_DIALOUT_NUMBER
	EMPTY_CAPABILITIES_FOR_NON_PROVISIONED_ ENDPOINT_MEETING
	ENDPOINT_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	ENDPOINT_DOES_NOT_SUPPORT_OBTP
	ENDPOINT_NOT_ACTIVE
	ENDPOINT_WITHOUT_ORGANIZATION_ASSIGNED
	ENDPOINTS_FROM_DIFFERENT_CTSMANS
	ENDPOINTS_FROM_DIFFERENT_ORGANIZATIONS
	INTEROP_ENDPOINTS_MUST_USE_DIALOUT
	INTEROP_ENDPOINTS_CANNOT_BE_SIP
	INVALID_CAPACITY_VALUE
	INVALID_CONFERENCE_ID
	INVALID_DURATION
	INVALID_E164_NUMBER
	INVALID_STRING_LENGTH
	REGION_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	MAXIMUM_MEETING_DURATION_EXCEEDED
	MEETING_IS_CANCELLED
	MEETING_START_TIME_IN_PAST
	MISSING_ENDPOINT_NUMBER
	MISSING_ENDPOINT_PROTOCOL
	MISMATCHED_MEETING_TYPE
	NOT_ENOUGH_ENDPOINTS_OR_EQUIVALENT_CAPACITY
	ORGANIZATION_DOES_NOT_BELONG_TO_SERVICE_ PROVIDER
	REMOTE_ACCESS_NUMBER_NOT_VALID
	REQUIRED_PARAMETER_MISSING
	SCHEDULER_EMAIL_NOT_VALID
ERC_INVALID_DATE_TIME	The supplied date and time string is invalid.

Table 3-39   Scheduling Exception Values (continued)

Exception Value	Description or Cause Code
ERC_SCHEDULING_VALIDATION_EXCEPTION	At least one of the supplied parameters is invalid. See specific cause codes below:
	CANNOT_SCHEDULE_IN_PAST
	CTS_ENDPOINTS_MUST_NOT_USE_DIALOUT
	DUPLICATE_CONFERENCE_ID
	DUPLICATE_ENDPOINT
	DUPLICATE_GUEST_DIALOUT_NUMBER
	EMPTY_CAPABILITIES_FOR_NON_PROVISIONED_ENDPOINT_MEETING
	ENDPOINT_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	ENDPOINT_DOES_NOT_SUPPORT_OBTP
	ENDPOINT_NOT_ACTIVE
	ENDPOINT_WITHOUT_ORGANIZATION_ASSIGNED
	ENDPOINTS_FROM_DIFFERENT_CTSMANS
	ENDPOINTS_FROM_DIFFERENT_ORGANIZATIONS
	INTEROP_ENDPOINTS_MUST_USE_DIALOUT
	INTEROP_ENDPOINTS_CANNOT_BE_SIP
	INVALID_CAPACITY_VALUE
	INVALID_CONFERENCE_ID
	INVALID_DURATION
	INVALID_E164_NUMBER
	INVALID_STRING_LENGTH
	REGION_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	MAXIMUM_MEETING_DURATION_EXCEEDED
	MEETING_IS_CANCELLED
	MEETING_START_TIME_IN_PAST
	MISSING_ENDPOINT_NUMBER
	MISSING_ENDPOINT_PROTOCOL
	MISMATCHED_MEETING_TYPE
	NOT_ENOUGH_ENDPOINTS_OR_EQUIVALENT_CAPACITY
	ORGANIZATION_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	REMOTE_ACCESS_NUMBER_NOT_VALID
	REQUIRED_PARAMETER_MISSING
	SCHEDULER_EMAIL_NOT_VALID
ERC_INVALID_DATE_TIME	The supplied date and time string is invalid.

Table 3-39   *Scheduling Exception Values (continued)*

Exception Value	Description or Cause Code
ERC_SCHEDULING_VALIDATION_EXCEPTION	At least one of the supplied parameters is invalid. See specific cause codes below:
	CANNOT_SCHEDULE_IN_PAST
	CTS_ENDPOINTS_MUST_NOT_USE_DIALOUT
	DUPLICATE_CONFERENCE_ID
	DUPLICATE_ENDPOINT
	DUPLICATE_GUEST_DIALOUT_NUMBER
	EMPTY_CAPABILITIES_FOR_NON_PROVISIONED_ ENDPOINT_MEETING
	ENDPOINT_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	ENDPOINT_DOES_NOT_SUPPORT_OBTP
	ENDPOINT_NOT_ACTIVE
	ENDPOINT_WITHOUT_ORGANIZATION_ASSIGNED
	ENDPOINTS_FROM_DIFFERENT_CTSMANS
	ENDPOINTS_FROM_DIFFERENT_ORGANIZATIONS
	INTEROP_ENDPOINTS_MUST_USE_DIALOUT
	INTEROP_ENDPOINTS_CANNOT_BE_SIP
	INVALID_CAPACITY_VALUE
	INVALID_CONFERENCE_ID
	INVALID_DURATION
	INVALID_E164_NUMBER
	INVALID_STRING_LENGTH
	REGION_DOES_NOT_BELONG_TO_SERVICE_PROVIDER
	MAXIMUM_MEETING_DURATION_EXCEEDED
	MEETING_IS_CANCELLED
	MEETING_START_TIME_IN_PAST
	MISSING_ENDPOINT_NUMBER
	MISSING_ENDPOINT_PROTOCOL
	MISMATCHED_MEETING_TYPE
	NOT_ENOUGH_ENDPOINTS_OR_EQUIVALENT_CAPACITY
	ORGANIZATION_DOES_NOT_BELONG_TO_SERVICE_ PROVIDER
	REMOTE_ACCESS_NUMBER_NOT_VALID
	REQUIRED_PARAMETER_MISSING
	SCHEDULER_EMAIL_NOT_VALID
ERC_INVALID_DATE_TIME	The supplied date and time string is invalid.

Table 3-39   ***Scheduling Exception Values (continued)***

Exception Value	Description or Cause Code
ERC_INVALID_QUERY	The supplied query is badly-formed or contains an invalid property.
ERC_CTSMAN_COMMUNICATION_FAILURE	The Cisco TelePresence Manager might be unavailable or the supplied login credentials are invalid. See specific cause codes below. CTSMAN_SCHEDULING_ERROR CTSMAN_CONNECTION_ERROR CTSMAN_INTERCOMPANY_NOT_CONFIGURED
ERC_CONCURRENCY_FAILURE	This is a transient exception that often resolves itself on retry. The client is encouraged to retry the request.
ERC_STRING_TOO_LONG	The parameter string is too long.
ERC_CAPACITY_NOT_AVAILABLE	There is not enough capacity at the specified time for the meeting to be reserved.
ERC_NOT_FOUND	The provided key does not resolve to a valid item.
ERC_MISMATCHED_SERVICE_PROVIDER	The service provider that is supplied in the request does not match the stored service provider that is associated with the specified resource (endpoint or region).
ERC_LICENSE_ERROR	The Cisco TelePresence Exchange System requires a valid meeting service license. See specific cause codes below. LICENSE_NOT_VALID LICENSE_SERVER_NOT_ACCESSIBLE
ERC_ORG_BANDWIDTH_NOT_AVAILABLE	There is not enough available organization bandwidth for the meeting to be reserved.
ERC_CUVCM_SCHEDULING_FAILURE	This ERC is obsolete.
ERC_LARGE_CAPACITY_NOT_AVAILABLE	There is not enough capacity available on the large capacity CTMS at the specified time to reserve the meeting.
ERC_CAPABILITY_EXCEPTION	The API could not provide the meeting capabilities specified in the request. See specific cause codes below. CAPABILITY_NOT_SUPPORTED CAPABILITY_COMBINATION_NOT_VALID CAPABILITY_MUST_BE_SPECIFIED

Table 3-39   Scheduling Exception Values (continued)

Exception Value	Description or Cause Code
ERC_RESOURCE_UNAVAILABLE	There is insufficient resource capacity at the specified time on the specified resource type. When you see the "large" term within the cause code, it refers to large meetings. See specific cause codes below. CTMS_OR_TPS_RESOURCE_NOT_AVAILABLE LARGE_CTMS_OR_TPS_RESOURCE_NOT_AVAILABLE LARGE_TEST_CTMS_OR_TPS_RESOURCE_NOT_ AVAILABLE TEST_CTMS_OR_TPS_RESOURCE_NOT_AVAILABLE (Test resources are for internal use only. You can ignore test resource cause codes.)
ERC_RESTORE_IN_PROGRESS	A database restore is in progress; and, no requests can be handled. Once the restore is complete, then requests can be handled. (A database restore can take several minutes.)

Creating Queries

For services that retrieve information about data objects (such as endpoints or meetings) in the Cisco TelePresence Exchange System, the API provides a generalized query mechanism to allow clients to flexibly construct the desired queries. The API supports simple and complex queries. A null query is interpreted as a request to get all of the requested data objects.

This section provides a description of the queries and includes the following topics:

Query Syntax

A simple query follows the following syntax:

(*<property>* *<operator>* *<value>*) as shown in the following example:

```
(name sw Building31)
```

where

name is the *property*

sw is the *operator*

Building 31 is the *value*

Table 3-40 describes query parameters.

Table 3-40   Query Parameters

Parameter	Description
property	Name of the property of the object to be queried. Examples include: • name • id • region.name • organization.serviceProvider.serviceProviderKey You can specify the property in dotted notation format, which is shown in the above example.
operator	The operator is a comparator or string match operator between the property and the value. Comparator operators include the following: • eq - equals • lt - less than • le - less than or equal • gt - greater than • ge - greater than or equal The string match mode operators include the following: • sw - string starts with • ew - string ends with • contains - string contains • null - is null • notnull - is not null
value	Numeric or string value. String values are not case sensitive and can contain spaces. When the operator is null or notnull, no value parameter is specified in the query.

Complex Queries

Simple queries can be combined by using the conjunction operator (AND) and the disjunctive operator (OR) to make complex queries. For conjunction operations, the syntax is as follows:

(AND (query) (query') (query'') …)

The following is an example query for selecting specific endpoints:

(AND (name contains sjc) (lastModified gt 2011-0-04) (isActive eq true))

For disjunctive operations, the syntax is as follows:

(OR (query) (query') (query'') …)

The complex query syntax is fully recursive, so that each query in a complex query can also be a conjunctive query (by using the AND keyword) or a disjunctive query (by using the OR keyword).

Null Queries

If you send a null or blank query in a request, the scheduling API interprets the request as a request to get all of the requested objects.

Endpoint Query Properties

Table 3-41 provides a summary of query properties for endpoints.

Table 3-41   Endpoint Query Properties

Property	Description	Query String Example
key	Unique identifier	`(key eq 0a4fa39d9c2d11df98187da9da46d147)`
name	Endpoint name	`(name sw Cisco)`
description	Endpoint description	`(description notnull)`
number	Directory number	`(number eq 7206)`
isActive	Is endpoint activated	`(isActive eq true)`
isSupportsOBTP	Does endpoint support OBTP	`(isSupportsOBTP eq true)`
organization.name	Organization name	`(organization.name sw Cisco)`
organization.description	Organization description	`(organization.description contains Ireland)`
mediaProfile.name	Media profile name	`(mediaProfile.name contains CTS-1000)`
mediaProfile.description	Media profile name description	`(mediaProfile.description sw Default CTS)`
mediaProfile.numberOfScreens	Media profile number of screens	`(mediaProfile.numberOfScreens gt 1)`
mediaProfile.protocol	Media profile protocol (ISDN, H323, or SIP)	`(mediaProfile.protocol ne ISDN)`
organization.serviceProvider.name	Service provider name	`(organization.serviceProvider.name sw Building31)`
organization.serviceProvider.description	Service provider description	`(organization.serviceProvider.description contains telepresence)`

Meeting Query Properties

Table 3-42 provides a summary of query properties for meetings.

Table 3-42   *Meeting Query Properties*

Property	Description	Query String Example
meetingKey	Unique identifier	`(meetingKey eq 0a4fa39d9c2d11df98187da9da46d147)`
subject	Meeting subject	`(subject contains weekly staff)`
scheduler	Meeting scheduler	`(scheduler eq john@cisco.com)`
conferenceID	Meeting ID or access code	`(conferenceID eq 11456271)`
startTime	Starting time of the meeting	`(startTime ge 2011-02-01)`
endTime	Ending time of the meeting	`(endTime gt 2011-04-16T12:00)`
duration	Duration of the meeting	`(duration le 30)`
isRemote	Is this a remote meeting	`(isRemote eq true)`
isTwoPartyDirect	Is this a direct dial meeting	`(isTwoPartyDirect eq true)`
isCancelled	Was the meeting cancelled	`(isCancelled eq true)`
serviceProvider.name	Service provider name	`(serviceProvider.name sw Building31)`
serviceProvider.description	Service provider description	`(serviceProvider.description contains telepresence)`

Organization Query Properties

Table 3-43 provides a summary of query properties for organizations.

Table 3-43   *Organization Query Properties*

Property	Description	Query String Example
key	Unique identifier	`(key eq 0a4fa39d9c2d11df98187da9da46d147)`
name	Organization name	`(name sw Cisco)`
description	Organization description	`(description contains Ireland)`
maxBandwidth	Maximum bandwidth	`(maxBandwidth ge 20)`
directDialEnabled	Is direct dial enabled	`(directDialEnabled eq true)`
serviceProvider.name	Service provider name	`(serviceProvider.name sw Building31)`
serviceProvider.description	Service provider description	`(serviceProvider.description contains telepresence)`

Regions Query Properties

Table 3-44 provides a summary of query properties for regions.

Table 3-44   Regions Query Properties

Property	Description	Query String Example
key	Unique identifier	`(key eq 0a4fa39d9c2d11df98187da9da46d147)`
name	Region name	`(name sw WestCoast)`
description	Region description	`(description notnull)`
serviceProvider.name	Service provider name	`(serviceProvider.name sw Building31)`
serviceProvider.description	Service provider description	`(serviceProvider.description contains telepresence)`

Service Provider Query Properties

Table 3-45 provides a summary of query properties for service providers.

Table 3-45   Service Provider Query Properties

Property	Description	Query String Example
key	Unique identifier	`(key eq 0a4fa39d9c2d11df98187da9da46d147)`
name	Service provider name	`(name sw Building31)`
description	Service provider description	`(description contains telepresence)`
helpDeskNumber	Help desk phone number	`(helpDeskNumber eq 1000)`