



Cisco TelePresence Management Suite Extension Booking API

Programming Reference Guide

API version 11
(Cisco TMS 14.2)

D13566 14

May 2013

Contents

Introduction	5
API overview	6
Functional overview	7
Main features	7
Booking ownership	7
Conference routing	7
Replication	7
Cisco TMS entities	9
System	9
Conference	9
User	9
API versioning	10
Version history	10
Versioning examples	10
Using the APIs for remote setup and booking	12
Usage requirements	13
Licensing	13
Booking rights	13
NTLM authentication	14
WebEx Enabled TelePresence requirements	14
Setting up your environment	15
API locations	15
Security	15
Optional elements	15
Boolean values	15
The SOAP header	16
ExternalAPIVersionSoapHeader	16
ContextHeader	16
GUI pattern	17
System information	17
Availability information	17
Booking management	17
Replication pattern	19
Import	19
Replication	19
Booking	19
Availability	20
Limitations	21
WebEx booking limitations	21
Other booking limitations	21
Unused values	21
Remote setup API reference	23
TMSSystem object	24
TMSSystem	24
TimeZone	24
SystemCategory	25
SystemStatus	25

TMSSystem object XML	25
TMS user object	27
User	27
TMS user object XML	27
Remote Setup API functions	28
DisableConferenceAPIUser	28
GenerateConferenceAPIUser	28
GetConferenceLanguages	28
GetSystemById	29
GetSystems	29
GetSystemsForUser	29
GetUsers	29
IsAlive	30
IsBookOnBehalfOfUser	30
IsLocalAdmin	30
IsTMSBookOnBehalfUser	30
IsTMSServiceUser	30
IsTMSSiteAdmin	31
SetPrimarySystem	31
Booking API reference	32
Conference object	33
Conference	33
Participant	41
RecurrencePattern	43
ISDNBandwidth	44
Conference object XML	44
Booking API functions	46
DeleteConferenceById	46
DeleteConferenceRecInstanceById	46
EndConferenceById	46
GetConferenceById	46
GetConferencesForUser	47
GetConferenceBookingEventMail	47
GetConferenceIdByExternalId	48
GetConferenceInviteMail	48
GetConferencesForSystems	49
GetDefaultConference	49
GetRecordingAliases	50
GetRecurrentConferenceById	50
GetTimeZoneRulesById	50
GetTransactionsSince	51
SaveConference	51
SaveConferenceRecInstance	51
SaveConferences	51
Error codes and error handling	53
Error codes	54
Error handling	56
Exceptions	56
HTTP error 401	56

Code examples	57
Remote setup API examples	58
Booking API setup	59
Using different participant types	60
Booking API example with a recording participant	61
Saving and updating recurrent conferences	62
Time zone handling	63
Regular time zone	63
Custom time zone	63
Error handling examples	65
Conference in the past	65
System unavailable	65
Bibliography	67

Introduction

Cisco TelePresence Management Suite Extension Booking API (Cisco TMSBA) gives developers access to Cisco TelePresence Management Suite (Cisco TMS) booking functionality. The API is also used by the Cisco TMS extensions for Microsoft Exchange and IBM Lotus Notes, and the Cisco TMSPE Smart Scheduler.

This document details the objects and entities used by Cisco TMSBA, includes references of the functions and objects available in the booking and remote setup APIs, explains the versioning logic, and provides usage patterns suggesting how an external user interface, booking database, or booking system may interact with Cisco TMS using the APIs.

The target audience for this document is developers seeking to implement a data/audio/video conferencing booking solution that is not supported by Cisco TMS directly, or where existing Cisco TMS features do not provide the necessary interoperability. Such booking systems will be referred to as external booking systems in this document.

API overview

This chapter provides an overview of the basic principles of Cisco TMSBA.

Functional overview	7
Cisco TMS entities	9
API versioning	10

Functional overview

Cisco TMSBA makes it possible to let users book resources from custom booking applications (in this document referred to as "clients"), integrating the custom booking application with the Cisco TMS reservation database.

Using Cisco TMSBA to interact with Cisco TMS is the only safe and supported way of integrating third party or custom booking applications with Cisco TMS. The Cisco TMSBA is a versioned and stable interface into Cisco TMS, where backward compatibility is guaranteed in new releases.

Main features

Cisco TMSBA has three main features:

- Importing and/or displaying Cisco TMS-managed resources in an external client or booking system.
- Reading and displaying system availability information and bookings from the reservation database of Cisco TMS. This information can be used for replicating bookings from Cisco TMS to the external booking system.
- Forwarding booking requests made by an external booking system to Cisco TMS. Forwarding a booking request to Cisco TMS lets the client utilize the routing logic of Cisco TMS, which determines whether network resources like an Multipoint Control Unit (MCU) are required, and automatically reserves these resources. The client therefore does not need to worry about infrastructure resources such as gateways and MCU port availability.

Booking ownership

The client can choose whether to authenticate with Cisco TMS as a service account or as the user actually making the booking. If authenticating as a service account, the client must explicitly specify the actual owner of the booking when performing the `SaveConference` function. If choosing this option, it is important that the service account is a member of a group having *Book on behalf of* permissions in Cisco TMS.

`IsTMSBookOnBehalfUser` and `IsBookonBehalfOfUser` in the remote setup API can be used to assess whether a service account or other user has *Book on behalf of* permissions. The `GenerateConferenceAPIUser` function can be used for creating a service account. See [Remote setup API reference \[p.23\]](#).

Conference routing

When booking through the Cisco TMSBA, clients book endpoints only. Network infrastructure products, such as gateways and Multipoint Control Units (MCUs) are automatically added by Cisco TMS if needed. The settings under **Administrative Tools > Conference Settings > Advanced Conference Options** in Cisco TMS are used when routing conferences created through Cisco TMSBA.

Replication

Cisco TMSBA supports two-way replication between the client and Cisco TMS. If the client maintains its own copy of the reservation database, it must periodically ask Cisco TMS for changes.

In Cisco TMS, all changes to bookings are tracked in the Cisco TMS (tmsng) database. The data in this table is available in Cisco TMSBA through the **GetTransactionsSince** function. This function gives the client a list of recent changes on the Cisco TMS side. This function should be run fairly often (such as every five minutes) so that the client and Cisco TMS reservation databases are in a consistent state.

Users in Cisco TMS have an "Exchange Integration Service Account" attribute. If this attribute is set to *True*, Cisco TMS sends an email message to the user every time a booking is created, changed, or deleted. By monitoring the mailbox of an "Exchange Integration Service Account" for new email, clients can be prompted to run the **GetTransactionsSince** function.

However, this should not be the only mechanism triggering replication from the client side, as email may be delayed or fail to reach the mailbox of the "Exchange Integration Service Account". Clients should thus always call the **GetTransactionsSince** function periodically as a fallback mechanism.

Cisco TMS entities

System

A system entity is any item that can be booked. Note that systems provisioned using Cisco TelePresence Management Suite Provisioning Extension cannot be booked and are therefore not considered systems in this context.

There are two types of system entities: systems that are controlled by Cisco TMS (and thus receive phonebooks, generate CDRs and so on), and systems added to Cisco TMS as the "Room" and "Equipment" types. Other types of entries, such as phonebook entries or provision directory users, are not system entities in Cisco TMS.

Each system entity has its own **TMS System Id**, which is used to uniquely identify the system in Cisco TMS. A subset of this system data is available in Cisco TMSBA through the **GetSystemById** function.

In the tmsng database, systems are stored in the **objSystem** table. System settings (such as SIP URIs, gatekeeper addresses, and software versions) are stored in the **field_SystemField** table.

Conference

A conference entity, or booking, is a reservation in Cisco TMS. Each conference has a unique conference ID.

Conference and their attributes (ID, start time, end time, title, and so on) are stored in the tmsng database in the **ScheduledCall** table. Phonebook entries, systems, and external participants that are part of a conference are stored in the ScheduledParticipant table. The Cisco TMSBA functions that interact with conferences, such as **GetConferenceById**, get and set data to and from both tables..

User

The Cisco TMS user entity holds information about Cisco TMS users, such as their first name, last name, username, and email address. All users have a unique user ID.

This information is stored in the **ActUser** table in the tmsng database

API versioning

Cisco TMSBA versioning is designed to provide a backwards compatible API to clients. This means that applications written for an older version of the API will keep working when upgrading to Cisco TMS with a newer version of the API.

Each SOAP message sent to the API by the client must announce which version it complies with in a header. The API will filter what is returned to the client based on this announced version. See [The SOAP header \[p.16\]](#).

Version history

Version 0 of the API corresponds to version 9 of Cisco TMS. Not all versions of Cisco TMS include changes to the API.

Below is an overview of the last Cisco TMS versions that have included a new version of Cisco TMSBA.

API version	Cisco TMS version
11	14.2
10	14.1.1
9	13.2
8	13.1.2
7	13.1
6	13.0.1
5	12.6

Versioning examples

When a change to the API is needed, the WSDL must be updated. The WSDL is the contract between the API and the clients and provides information covering all methods and data types, including values, that the API supports.

Time zone versioning

Cisco TMSBA allows each conference object to include a **ConferenceTimeZoneRules** element that contains an array of rules for the time zone (UTC offset) and daylight savings time. (For detail about this element, see [ConferenceTimeZoneRules \[p.39\]](#).)

This element was introduced in Cisco TMSBA version 11 with Cisco TMS 14.2. If a client is using version 10 or earlier of the API, regardless of Cisco TMS version:

- Booking dates must be in UTC.
- DayOfWeek values in recurrence patterns must be given in UTC if the API version used is 8 or later.
- Dates are provided in UTC when retrieving conference information.
- Cisco TMS uses the time zone rules of the server.

Note that these conferences will be prone to DST change errors when the time zone of the client is not the same as the configured time zone on the Cisco TMS server.

Introducing a new bandwidth value

When, for example, support for an additional bandwidth value is added to the API, the WSDL changes, and the version number is increased. If this new bandwidth value is added in version 9 of the API, every client declaring that they are using version 9 or later will get this new value returned from Cisco TMSBA.

Clients that announce compliance to versions earlier than 9 will *not* get the new value returned. Instead, the API returns the special value *default*. The API allows all incoming values, but filters values going out. A client declaring a version lower than 9, that then enumerates a conference with the new bandwidth value, will get the special value *default* returned.

If the client uses this conference and updates the conference with bandwidth set to default, no change to the bandwidth value is made, as the API knows this special value means no changes should be made.

This filtering of values that older clients do not understand makes the API backwards compatible; older clients built on older WSDLs can still use an API with a higher version.

Using the APIs for remote setup and booking

This chapter presents the prerequisites and limitations for using the APIs for booking and remote setup, and outlines some suggestions for usage.

Usage requirements	13
Setting up your environment	15
The SOAP header	16
GUI pattern	17
Replication pattern	19
Limitations	21

Usage requirements

This section describes the licensing, permission, and authentication requirements for using the APIs.

Licensing

One of the following licenses must be available to make full use of Cisco TelePresence Management Suite Booking API:

- One Cisco TMS Application Integration License for each server using the API.
- One Cisco TelePresence Management Suite Booking API license per 25 registered systems.

The following API functions require one of the above licenses:

- **GetRecordingAliases**
- **GetTransactionsSince**
- **SaveConference**
- **SaveConferenceRecInstance**
- **SaveConferences**

The remaining API features do not require special licensing for use. Contact your Cisco reseller/partner for more licensing information.

Booking rights

Importing from Cisco TMS and booking meetings through the API requires authentication with Cisco TMS.

There are two possible models for user authentication.

Service user books on behalf of users

The simplest approach is configuring one service user in Cisco TMS for your client, and granting this user *Book on behalf of* permissions as described below.

This model is only appropriate if all users with access to the client can be granted the same permissions in Cisco TMS, as booking on behalf of someone will create a new Cisco TMS user in the default group if the user does not already exist.

All users book for themselves

If you need to set up different booking rights per user, or block some users from booking altogether, each user must authenticate with Cisco TMS individually through the API.

Setting up permissions

All users who will book meetings using the API must be members of a group whose permissions include *Booking*. Users who book on behalf of others also require *Book on behalf of* permissions.

Permissions in Cisco TMS are set on a group level. To modify the permissions set for a group:

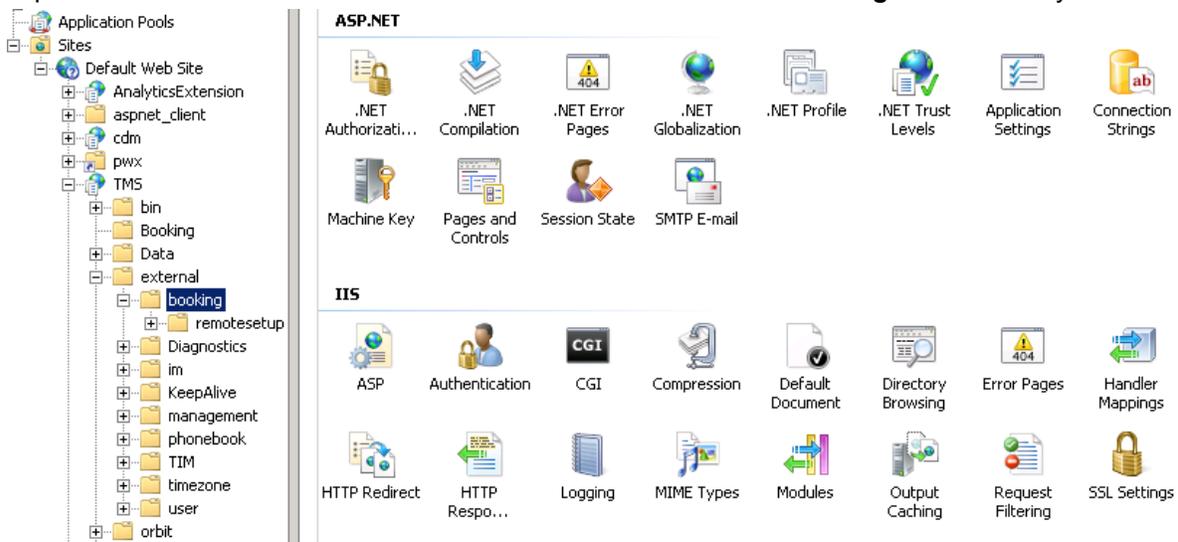
1. Go to **Administrative Tools > User Administration > Groups**.
2. Hover over the desired group, click the drop-down button and select **Set permissions**.
3. In the **Booking** section, under **Misc**, check *Booking* and, if appropriate, *Book on behalf of*.
4. Click **Save**.

NTLM authentication

On a default Cisco TMS installation, any API requires the use of Windows Challenge Response or NTLM authentication.

Not all environments support this authentication mechanism (non-Windows based environments), and you therefore may need to allow for Basic Authentication:

1. Open Internet Information Services manager on the Cisco TMS server.
2. Expand **Sites > Default Web Site** and browse to the **/TMS/external/booking** virtual directory.



3. In the **IIS** section, double-click on **Authentication**.
4. Right-click on **Basic Authentication** and select **Enable**.

Allowing Anonymous Authentication is not recommended and requires the **IUSR_<machinename>** to be given *Book on behalf of* permissions in Cisco TMS.

WebEx Enabled TelePresence requirements

In order to use Cisco TMSBA to book meetings that include WebEx, Cisco TMS must be set up with:

- A WebEx Enabled TelePresence option key.
- One or more WebEx sites.
- Single sign-on or specified WebEx credentials for each user (not service user).

For guidance on setting up WebEx Enabled TelePresence, see *WebEx Enabled TelePresence 2.0 Configuration Guide for Cisco TelePresence Management Suite*.

Setting up your environment

Cisco TMSBA provides a Web Services API that interfaces with the Cisco TMS booking engine. Web Services allows for simple integration into most common language and programming environments.

See your development tool reference for information on how to build implementation stubs to help speed the development of applications that use Web Services.

API locations

- The WSDL file for the Cisco TMS remote setup API is located at: **http://[Cisco TMS server]/tms/external/booking/remotesetup/remotesetupservice.asmx**
- The WSDL file for Cisco TMSBA is located at: **http://[Cisco TMS server]/tms/external/booking/bookingservice.asmx**

Microsoft Visual Studio .NET users can reference the APIs by selecting **Project > Add Web Reference**, or entering the URLs above. You will be required to authenticate through web services to create the reference.

In a network load balancing scenario, use the virtual IP address or DNS name of the cluster for this task to allow failover for the API.

Security

We strongly recommend using SOAP for all requests. For security reasons, HTTP GET and POST are only accessible from localhost. To change this, modify the Cisco TMS **web.config** file.

Optional elements

Optional elements are indicated in different ways in the WSDL:

- **minOccurs = 0** means the element can be omitted from the request XML altogether.
- **nillable="true"** means the element can hold an empty value.

The combination of these two is an element that can be skipped and be set to null (not a value).

Boolean values

The boolean lexical forms "1" and "true" are interchangeable in SOAP.

The SOAP header

ExternalAPIVersionSoapHeader

Each call made to the Cisco TMSBA must include the following header specifying the version of the API. The value specified in `ClientVersionIn` is used by the API to determine the output from the function. The XML below describes the `ExternalAPIVersionSoapHeader` object that is common for all calls to the API.

Do not set a number greater than the latest version of the API, as this may break compatibility when using later revisions.

```
<ExternalAPIVersionSoapHeader xmlns="http://tandberg.net/2004/02/tms/external/booking/">  
<ClientVersionIn>int</ClientVersionIn> <ClientIdentifierIn>string</ClientIdentifierIn> <C  
lientLatestNamespaceIn>string</ClientLatestNamespaceIn> <NewServiceURL>string</NewService  
URL> </ExternalAPIVersionSoapHeader>
```

If no version number is set, version `0` is the default.

ContextHeader

Two flags control whether an email confirmation of the request will be sent out, and whether the confirmation will include conference information such as routing, list of participating systems, and so on.

```
<ContextHeader xmlns="http://tandberg.net/2004/02/tms/external/booking/"> <SendConfirmati  
onMail>boolean</SendConfirmationMail> <ExcludeConferenceInformation>boolean</ExcludeConfe  
renceInformation> </ContextHeader>
```

The flags are not mandatory, and both are *false* by default.

GUI pattern

Cisco TMSBA can supply data to the front-end GUI of an external booking application. There are three information types.

System information

Information on Cisco TMS resources can be exported to an external application. By using [the remote setup API](#), data on systems in Cisco TMS can be exported to a front-end GUI and used to display system entities available in Cisco TMS.

Get a list of available systems in Cisco TMS by using either:

- `GetSystems`
- `GetSystemsForUser`

These functions return lists of `TMSSystem` objects, that include information such as the ID of the system, to show in the front-end GUI. `GetSystems` will return all systems in Cisco TMS, while `GetSystemsForUser` will only return the systems the user has booking privileges for. If the external GUI application controls system access, use `GetSystems` and filter the systems in the application.

Availability information

Information on the availability Cisco TMS entities can be exported to an external application. Reservations in the Cisco TMS internal reservation database can be displayed and bookings filtering by users.

- Get all Cisco TMS reservations between two specified dates by using `GetConferencesForUser`.
- Get system availability information by using `GetConferencesForSystems`.
- Get a specific conference, including any exceptions if it is a recurring conference, by using `GetRecurrentConferenceById`. This information can be used, for example, by an external application to display an availability calendar.
- Filter availability information by using the `Conference` object.
- The Remote Setup API function `GetUsers` returns all users registered in Cisco TMS. The output of this function can be used to display a drop-down list of all users in Cisco TMS, or show conferences booked by a specific person.

Booking management

The API allows you to forward booking requests from an external booking system to Cisco TMS, and reserve resources in Cisco TMS. (Information exchange: [External Booking System > TMS](#)).

- Get Conference objects with default values for Conference properties defined in Cisco TMS by using the `GetDefaultConference` function.
- Retrieve existing conferences by using `GetConferenceById`, `GetConferenceIdByExternalId` or `GetRecurrentConferenceById`.
- Save changes to a conference by editing the conference properties and using the function `SaveConference`. This will save the conference to Cisco TMS if the properties validate. If not, an exception will be raised.

- Delete a conference or series by using **DeleteConferenceById**. Beware that conference participants will be disconnected if the conference is deleted while it is active or connected.
- Delete an occurrence of a series by using **DeleteConferenceRecInstanceById**.
- Add recording to a conference by using **GetRecordingAliases** to get information about a user's recording aliases and use this information to add recording participant(s) to the conference.

Replication pattern

The APIs can be used in conjunction with external booking applications that have their own reservation database. There are three main components.

Import

The API can automate importing systems from Cisco TMS into a third-party application, or this can be initiated by the user via a GUI.

Get a list of available systems in Cisco TMS by using either of the following from the remote setup API:

- **GetSystems**
- **GetSystemsForUser**

These functions return lists of `TMSSystem` objects, and information such as the ID of the system, for use by a third party application. `GetSystems` will return all systems in Cisco TMS, while `GetSystemsForUser` will return only the systems the user has booking privileges for. If the external application controls system access, use `GetSystems` and filter the systems in the application.

Replication

External booking systems can keep track of booking transactions on the Cisco TMS server, and replicate bookings made using Cisco TMS. This part does not apply to external GUI front ends that do not have their own reservation database.

Get a list of transactions listed by transaction ID by using the `GetTransactionsSince` function. All conferences have a transaction ID property

The list of transactions contains:

- The transaction type (*New*, *Update*, and *Delete*)
- An associated conference ID.

Use `GetConferenceById` to get an updated `Conference` object and update the conference with the external source. The current transaction ID should then be updated to the last conference's `TransactionId`.

Booking

The API allows you to forward booking requests from an external booking system to Cisco TMS, and reserve the resources there.

- Get `Conference` objects with default values for `Conference` properties defined in Cisco TMS by using `GetDefaultConference`.
- Retrieve saved conferences by using one of the following functions:
 - `GetConferenceById`
 - `GetConferenceIdByExternalId`
 - `GetRecurrentConferenceById`
 - `GetConferencesForUser`
 - `GetConferencesForSystems`

- Save changes to a conference, by editing the conference properties and use function **SaveConference**. This will save the conference to Cisco TMS if the validation of the properties is OK. If not, an exception will be raised.

Availability

The API allows you to display reservations from the Cisco TMS internal reservation database.

Limitations

WebEx booking limitations

WebEx booking does not support all recurrence patterns and options supported by Cisco TMS:

- Exceptions from a recurrence pattern (moving or updating one or more meetings) are not supported.
- Some advanced recurrence patterns are not supported.

When WebEx is not supported for a particular booking, the booking will fall back to telepresence only.

WebEx-only meetings not supported

WebEx-only meetings should not be booked using Cisco TMSBA. If using Cisco TMS to create a conference that includes WebEx without including any telepresence participants, telepresence resources will still be taken up, as an MCU will connect to the conference. The API will book the conference, but return a warning when such conferences are created.

Also note that WebEx bookings do not support time zone rules.

Other booking limitations

Booking through Cisco TelePresence Management Suite Extension Booking API has the following limitations:

- The use of setup and teardown buffers in Cisco TMS is not supported.
- Cascading to additional MCUs when the number of participants exceeds the capacity of the first MCU is not supported.
To support such scenarios, set up Cisco TelePresence Conductor as the default MCU in Cisco TMS.
- When a service user is performing all bookings, the booking permissions are the same for all users. Individual permissions and restrictions are ignored.
- You cannot move a meeting from the past to the future.

Modifying ongoing meetings

Updating a single meeting that is currently ongoing is possible, but will not always be successful.

For example:

- changing the start time may disrupt the meeting.
- if the meeting is using an MCU that does not support WebEx, WebEx may not be added, as the meeting would have to be disconnected and re-routed for this to work.

If modifying a recurrent series while an instance is ongoing:

- changing the start time will be applied to the entire series, and the ongoing meeting may be disrupted.
- making any other modifications will be applied to upcoming instances only, and the ongoing meeting will be marked as an exception in Cisco TMS.

Unused values

The following values are present in the API, but not in use:

Function	Attribute	Value
RecurrencePattern	PatternEndType	<i>Never</i>
RecurrencePattern	FrequencyType	<ul style="list-style-type: none">■ <i>Secondly</i>■ <i>Minutely</i>■ <i>Hourly</i>■ <i>Yearly</i>
Participant	ParticipantCallType	<i>User</i>
ISDNBandwidth	Bandwidth	<i>Max</i>
ISDNBandwidth	IPBandwidth	<i>Max</i>

Remote setup API reference

The remote setup API accommodates the setup of users and systems prior to using the Booking API.

TMSSystem object	24
TMS user object	27
Remote Setup API functions	28

TMSSystem object

The TMSSystem object contains information about a system in Cisco TMS. This object is used to read information, as the remote setup API does not support updating system information in Cisco TMS.

Use this object to import the required information into the third party application. The **SystemId** is required to connect the application entity with the system in Cisco TMS. In addition other information can be imported and shown for informative purposes, for example the name of the system.

TMSSystem

SystemId	The ID of the system in Cisco TMS. Use this to refer to the associated system in Cisco TMS from your application. For example, when booking a conference, insert the IDs of the chosen systems into the Conference object.
SystemName	The name of the system in Cisco TMS. Use this to display the name of the system in your application.
Contact	The system contact associated with the system in Cisco TMS.
Manufacturer	The manufacturer of the system. For example, Cisco.
Description	A textual description stored in Cisco TMS. This file can contain information such as the number of chairs in the meeting room where the system is located.
SystemType	The type of system. For example, Cisco TelePresence System EX90.
QNumber	The IP or DNS address of the system.
ISDNNumber	The ISDN number of the system.
Location	The ISDN location where the system is located.
NetworkAddress	The fully qualified ISDN number of the system. A fully qualified ISDN number always includes the country code and area code. This is not implemented.
WebInterfaceURL	The http address of the web server of the system.
SIPUri	The SIP URI of the system.
H323Id	The H.323 ID of the system.
E164Alias	The E.164 alias of the system.
TimeZone	The time zone where the system is located.
SystemCategory	The system category.
SystemStatus	The status of the system.

TimeZone

TimezoneName	The name of the time zone.
StartTimeDTS	The start date of daylight saving time.

EndTimeDTS	The end date of daylight saving time.
GMTOffset	The GMT (UTC) offset.

SystemCategory

SystemCategory	An enumeration value of what category of system this is. The available options are: <ul style="list-style-type: none">■ <i>Endpoint</i>■ <i>Equipment</i>■ <i>Room</i>■ <i>Recording</i>
-----------------------	---

SystemStatus

SystemStatus	An enumeration with the status of the system when this function is call. Note that the status of the system can change frequently. The possible values are: <ul style="list-style-type: none">■ <i>Alive</i>■ <i>Idle</i>■ <i>InCall</i>■ <i>NoResponse</i>■ <i>Unknown</i>
---------------------	---

TMSSystem object XML

The XML below describes the TMSSystem object. Following the XML is a description of the elements and what information each element it contains.

Note that as all fields are not required, the output may contain less system information than the object can hold.

```
<TMSSystem>
  <SystemId>long</SystemId>
  <SystemName>string</SystemName>
  <Contact>string</Contact>
  <Manufacturer>string</Manufacturer>
  <Description>string</Description>
  <SystemType>string</SystemType>
  <NetworkAddress>string</NetworkAddress>
  <Location>string</Location>
  <ISDNNumber>string</ISDNNumber>
  <QNumber>string</QNumber>
  <WebInterfaceURL>string</WebInterfaceURL>
  <SIPUri>string</SIPUri>
  <H323Id>string</H323Id>
  <E164Alias>string</E164Alias>
  <TimeZone>
    <TimezoneName>string</TimezoneName>
    <StartTimeDTS>string</StartTimeDTS>
    <EndTimeDTS>string</EndTimeDTS>
  </TimeZone>
</TMSSystem>
```

```
        <GMTOffset>string</GMTOffset>
    </TimeZone>
    <SystemCategory>
        <systemCategory>Endpoint or Equipment or Room or Recording</systemCategory>
    </SystemCategory>
    <SystemStatus>
        <SystemStatus>Alive or Idle or InCall or NoResponse or Unknown</SystemStatus>
    </SystemStatus>
</TMSSystem>
```

TMS user object

The Cisco TMS user object contains information about Cisco TMS users. Use this object to access information about users in Cisco TMS. The XML document below describes the User object. Following the XML is a description of the elements and what information each element it contains.

User

Attribute	Description
DisplayName	The display name of the user.
EmailAddress	The e-mail address of the user.
FirstName	The first name of the user.
LastName	The last name of the user.
UserName	The Windows login name of the user.
IsHiddenUser	Boolean value used to represent whether this is a normal user (True), or a service account (False) that normally should not be displayed in a list of users.
TimeZone	The time zone where the user is located. Uses the same TimeZone object as TMSSystem.

TMS user object XML

```
<User>
  <DisplayName>string</DisplayName>
  <EmailAddress>string</EmailAddress>
  <FirstName>string</FirstName>
  <LastName>string</LastName>
  <UserName>string</UserName>
  <IsHiddenUser>boolean</IsHiddenUser>
  <TimeZone>
    <TimezoneName>string</TimezoneName>
    <StartTimeDTS>string</StartTimeDTS>
    <EndTimeDTS>string</EndTimeDTS>
    <GMTOffset>string</GMTOffset>
  </TimeZone>
</User>
```

Remote Setup API functions

This reference section describes all the available functions of the remote setup API.

DisableConferenceAPIUser

This function is used to disable a ConferenceAPI user. E-mail notifications for the user are disabled, and the user is removed from all groups in Cisco TMS except the Users group. This is done to keep references valid. Executing this function requires Cisco TMS Site Administrator privileges.

This function is typically used during uninstall procedures.

Supported parameters:

userName	The full username of the user to delete in NT4 style (domain\username).
-----------------	---

Returned data: None.

GenerateConferenceAPIUser

This function generates a Cisco TMS Booking API account in the default user container on the Cisco TMS server, including registering the user in Cisco TMS. It is typically used during installation/setup procedures.

The user will be:

- Hidden from normal user lists.
- Added to the Site Administrator Group.
- Configured to receive e-mail event scheduling notifications for all creation/update/deletions of bookings. These are typically used for updating the external booking system with changes done on the Cisco TMS server.

In order for the function to complete, the current user must be:

- A Cisco TMS Site Administrator
- A local computer administrator

Supported parameters:

userNameBase	The base portion of the user name. If a user with the name already exists a numeric postfix is added (for example tms-admin ==> tms-admin1).
encPassword	A base64 encoded password that is to be used for the newly created user.
emailAddress	The email address of the user.
sendNotifications	Whether the user should receive scheduling notifications.

Returned data: The username of the created user (NT4 domain/username style).

GetConferenceLanguages

Returns an array of Language objects.

Supported parameters: None

Returned data: An array of supported conference languages in TMS. The CultureInfo field specifies the exact variety of a language and can be used to set the ConferenceLanguage on the Conference object when scheduling conferences.

GetSystemById

This function returns information about a specific system. If the system is not found, [this causes an error](#).

Supported parameters:

TMSSystemId	System ID as given in Cisco TMS.
--------------------	----------------------------------

Returned data: A TMSSystem object.

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

GetSystems

This function returns all endpoints and rooms registered in Cisco TMS. Note that network systems, such as a Cisco TelePresence MCU, are not returned since they are normally not booked by the users, but are added to the conference by Cisco TMS if required.

Typically used during setup of resources in the external booking system to connect resources in Cisco TMS with resources in the external booking system.

Supported parameters: None

Returned data: An array of TMSSystem objects.

GetSystemsForUser

This function returns all endpoints and rooms that can be booked by the current user, the account credentials are used to communicate with Cisco TMSBA.

Note that network systems, such as a Cisco TelePresence MCU, are not returned since they are normally not booked by the users, but are added to the conference by Cisco TMS if required.

Typically used in the external booking system to list Cisco TMS resources in external booking system.

Supported parameters: None.

Returned data: An array of TMSSystem objects.

GetUsers

This function returns all users registered in Cisco TMS.

This function is typically used in the front-end GUI to provide a list of Cisco TMS users, and can filter output from the Cisco TMSBA based on users from this output.

Supported parameters: None.

Returned data: An array of User objects.

IsAlive

This function checks the connection to the web services of Cisco TMS.

It is typically used during installation to check the URL to this web service.

Supported parameters: None

Returned data: A boolean value true/false, which is *true* if the connection works.

IsBookOnBehalfOfUser

Checks whether the specified user (not the current user) is a member of a Cisco TMS group that has permissions to book on behalf of other users.

Supported parameters:

user	The Cisco TMS user ID of the user for whom to check permissions.
-------------	--

Returned data: A boolean value true/false, which is *true* if the user if the user has permissions to book on behalf of other users in Cisco TMS.

IsLocalAdmin

This function checks whether the current user can create local or Active Directory accounts in the default user container on the Cisco TMS server.

This is typically used during installation to check whether the user installing the integration has sufficient access to Active Directory. This function must return *True* in order for the `GenerateConferenceAPIUser` function to succeed.

Supported parameters: None.

Returned data: A boolean value true/false, which is *true* if the user is a local administrator.

IsTMSBookOnBehalfUser

Checks whether the current user is a member of a Cisco TMS group that has permissions to book on behalf of other users.

Supported parameters: None.

Returned data: A boolean value true/false, which is *true* if the user has permissions to book on behalf of other users in Cisco TMS.

IsTMSServiceUser

This function is used to check whether the current user is flagged as an Exchange Integration user and has access to book on behalf of other users.

This is typically used during installation to check whether the user installing the integration has sufficient access permissions for the Cisco TMS server.

Supported parameters: None.

Returned data: A boolean value *true/false*, which is *true* if the user is a Cisco TMS service user.

IsTMSiteAdmin

This function checks whether the current user is a member of the Cisco TMS Site Administrators group.

This is typically used during installation to check whether the user installing the integration has sufficient permissions towards the Cisco TMS server. This function should return *True* for the

GenerateConferenceAPIUser function to succeed.

Supported parameters: None.

Returned data: A boolean value *true/false*, which is *true* if the user is a Cisco TMS Site Administrator.

SetPrimarySystem

Supported parameters:

primSys	A Cisco TMS system ID.
----------------	------------------------

Returned data: A boolean value *true/false*, which is *true* if it is possible to set the Primary System for the current user.

Booking API reference

The booking API lets you schedule conferences in Cisco TMS using a third-party client, and replicate existing bookings between the two. This chapter is a reference to the conference object and to all available functions and parameters.

Conference object	33
Booking API functions	46

Conference object

This object can be used to read and write

- Conference properties such as **Start Time**, **End Time**, **Conference Title**, and **Conference Password**.
- Conference call-related values such as **Bandwidth**, **Picture mode**, and **Encryption mode**.

All conference resources, including video participants, audio participants, phone book participants, external participants and so on, are held in this object, together with routing information for connecting the resources. You also use the Conference object to define the conference type, that is, how the conference should be connected.

Conference data can be saved/updated, and handled by Cisco TMS using the **SaveConference** function described below.

Conference

Attribute	Read/Write	Description
ConferenceId	r/w, optional	When using SaveConference : <ul style="list-style-type: none"> ■ Set to -1 to create a new conference using GetDefaultConference. ■ Set to a value greater than 0 to update the existing conference that has the given ID in the Cisco TMS database.
Title	r/w, optional	If no title is specified, the Cisco TMS default will be used.
StartTimeUTC	r/w, required	The start and end times of the conference in UTC format. See http://www.w3.org/TR/NOTE-datetime for more information.
EndTimeUTC	r/w, required	Only UTC times, ending with Z, are supported. Example: 1975-06-0123:32:11Z.
RecurrenceInstanceIdUTC	r, only used when getting conference from Cisco TMS	Gives the start date of the instance of the meeting according to the recurrence pattern. If this is different from StartTimeUTC , the meeting is an exception to the recurrence pattern. Only UTC times, ending with Z, are supported. Example: 1975-06-0123:32:11Z.
RecurrenceInstanceType	r, only used when getting conference from Cisco TMS	If this string contains the value 'modify' it means that the particular meeting is an exception to a recurrence pattern. If the string contains "deleted", it is a meeting that has been deleted from a series of recurring meetings.
FirstOccurrenceRecInstanceIdUTC	r, only used when getting conference from Cisco TMS	Gives the start date of first instance of the meeting according to the recurrence pattern. Only UTC times, ending with Z, are supported. Example: 1975-06-0123:32:11Z.

Attribute	Read/Write	Description
RecurrencePattern	r/w, optional	Sets the recurrence patterns for recurrent meetings. This is not valid if you call the SaveConferenceRecInstance function. See RecurrencePattern [p.43] .
OwnerId	r/w, optional	Elements used to look up the owner of the conference. <ul style="list-style-type: none"> ■ If OwnerUserId is specified, it will be looked up in the Cisco TMS database.
OwnerUserName	w, optional	<ul style="list-style-type: none"> ■ If no OwnerUserId is specified, but the OwnerUserName is set, it will be looked up in the Cisco TMS database. If not found, a lookup will also be performed in Active Directory if import is enabled.
OwnerEmailAddress	w, optional	<ul style="list-style-type: none"> ■ If neither OwnerUserId nor OwnerUserName are specified, the OwnerEmailAddress will be looked up in Cisco TMS. If not found, an AD lookup will be performed if import is enabled.
OwnerFirstName	w, optional	These elements are not used for lookup, but can be stored for the new user if no it does not exist in Cisco TMS and AD lookup is not enabled.
OwnerLastName	w, optional	
ConferenceType	r/w, optional	<p>Setting determining how the conference will be launched. The valid values are:</p> <ul style="list-style-type: none"> ■ <i>Automatic Call Launch</i>, connect all participants at conference start time and disconnect them again at conference end time. ■ <i>One Button to Push</i>, allows for OBTP call setup on supported systems. ■ <i>Manual Call Launch</i>, the conference master participant will be asked to connect the call at conference start time. ■ <i>Reservation Only</i>, reserve the participants for the conference duration, but do not create a route. ■ <i>Ad-Hoc conference</i>, a conference resolved, but not initiated, by Cisco TMS. ■ <i>Default</i>, keep the conference type specified on initial booking of the conference. <p>If unspecified, the default conference type configured in Cisco TMS will be used.</p>
Bandwidth (Discontinued)	—	This item has been deprecated and is included for backwards compatibility only. Use ISDNBandwidth and IPBandwidth to control the conference bandwidth. See ISDNBandwidth [p.44] .
PictureMode	r/w, optional If not specified, Default is assumed	<p>The picture mode/conference layout to use for a conference using Cisco TelePresence MPS. The valid values are:</p> <ul style="list-style-type: none"> ■ <i>Continuous Presence</i>, ■ <i>Enhanced CP</i>, ■ <i>Voice Switched</i>, ■ <i>Default</i>, keep the picture mode specified on initial booking of the conference. <p>If unspecified, the default conference type configured in Cisco TMS will be used.</p>

Attribute	Read/Write	Description
Encrypted	r/w, optional If not specified, Default is assumed	<p>The encryption mode for the conference. The valid values are:</p> <ul style="list-style-type: none"> ■ <i>Yes</i> ■ <i>No</i> ■ <i>If Possible</i> ■ <i>Default</i>, keep the picture mode specified on initial booking of the conference. <p>If unspecified, the default encryption setting configured in Cisco TMS will be used.</p>
DataConference	r/w, optional	<p>Legacy method of adding WebEx to a conference. See ExternalConference below for the preferred method.</p> <p>The valid values are:</p> <ul style="list-style-type: none"> ■ <i>Yes</i> ■ <i>No</i> (default) ■ <i>If Possible</i> ■ <i>Default</i>, keep the data conference setting specified on initial booking of the conference.
ExternalConference	r/w, optional	<p>Used to include a web conference with the telepresence meeting. The supported conference type is WebEx. See ExternalConference [p.37].</p>
ShowExtendOption	r/w, optional If not specified, Default is assumed	<p>Set this value to specify extend option behavior when the scheduled conference is close to ending.</p> <ul style="list-style-type: none"> ■ <i>Yes</i>—prompt the VC Master (the first endpoint in the participant list) to extend the conference ■ <i>No</i>—do not offer to extend conference ■ <i>Automatic Best Effort</i>—automatically extend conference ■ <i>Default</i>—keep the Show Extend Option setting specified on initial booking of the conference. <p>If unspecified, the default Show Extend Option defined in the Administrator Tools Page in Cisco TMS is used.</p>
Password	r/w, optional	<p>The numeric PIN that conference participants must enter to join the call. Auto-generated password may be added if Cisco TMS is set up to create them.</p>
BillingCode	r/w, optional	<p>The billing code to use for the conference. If Cisco TMS requires billing codes, this field must be specified and will be validated against the list of billing codes in Cisco TMS. If no match is found, the conference will not be created and the API will throw an "Invalid billing code" exception.</p> <p>This setting is blank by default.</p>
ISDNRestrict	r/w, optional	<p>Whether the ISDN channels should be restricted to use 54k and not 64k.</p> <p>The default is <i>No</i>.</p>

Attribute	Read/Write	Description
ConferenceInfoText	r, only used when getting conference from Cisco TMS.	Information on how the conference will connect, including routing information. Based on Cisco TMS templates.
ConferenceInfoHTML	r, only used when getting conference from Cisco TMS.	Information in HTML markup on how the conference will connect, including routing information. Based on Cisco TMS templates.
UserMessageText	r/w, optional	A user definable text/description of the conference. The default is blank.
ExternalSourceId, ExternalPrimaryKey	r/w, optional	An external source and ID definable by the client, this is used to synchronize the Cisco TMS database with the external sources database. If Cisco TMS is given a value for these fields, Cisco TMS will return the value for all instances of the same conference. Default is blank.
Participants	r/w, required	List of conference participants. When calling GetDefaultConference , the participant list will be empty.
RecordedConferenceUri	r, only used when getting conference from Cisco TMS	If the conference is recorded, this is the URI of the conference recording.
WebConferencePresenterUri	r, only used when getting conference from Cisco TMS	The URIs that the presenter and attendees respectively will use to join WebEx when the legacy DataConference attribute has been used. See ExternalConference for the recommended way to add WebEx.
WebConferenceAttendeeUri	r, only used when getting conference from Cisco TMS	

Attribute	Read/Write	Description
ISDNBandwidth	r/w, optional	The ISDN and IP bandwidths of the conference. If unspecified, the default ISDN bandwidth configured in Cisco TMS will be used. The valid values are: <ul style="list-style-type: none"> ■ 1b/64kbps ■ 2b/128kbps ■ 3b/192kbps ■ 4b/256kbps ■ 5b/320kbps ■ 6b/384kbps ■ 8b/512kbps ■ 12b/768kbps ■ 18b/1152kbps
IPBandwidth	r/w, optional	<ul style="list-style-type: none"> ■ 23b/1472kbps ■ 30b/1920kbps ■ 32b/2048kbps ■ 48b/3072kbps ■ 64b/4096kbps ■ 7b/448kbps ■ 40b/2560kbps ■ 96b/6144kbps ■ <i>Max</i>, use as much bandwidth as available and necessary. ■ <i>Default</i>, keep the bandwidth specified on initial booking of the conference.
ConferenceLanguage	r/w, optional If not specified, default is assumed	The language used for email invitations and other notifications regarding the meeting. A list of supported languages is available from the Remote Setup API, see GetConferenceLanguages [p.28] .
ConferenceTimeZoneRules	r/w, optional	An array of time zone rules for the conference. See ConferenceTimeZoneRules [p.39] .

ExternalConference

The only supported type of external conference is currently WebEx.

WebEx

There are two ways to add WebEx to a telepresence booking:

- Setting **ExternalConference** with a **WebEx** element inside of it initiates the addition of WebEx to a booking, or an update to existing WebEx information for a conference. This is the recommended way to add WebEx.
- The legacy way: Set **DataConference** to Yes or If possible and externalconference is not set.

To remove WebEx from a booking:

- Set an empty **ExternalConference** (no **WebEx** element).
- The legacy way: Set `dataconfmode` to *Off*, do not include **ExternalConference**.

Note that as WebEx does not support exceptions (meetings in a series that diverge from the series pattern), the WebEx calendar may become out of sync with the Cisco TMS if using the API to create a series with exceptions.

WebEx also cannot be added to a single instance of a recurrent series, or removed from a single instance of a series.

Attribute	Read/Write	Description
MeetingKey	r/w	The WebEx meeting number.
SipUrl	r/w	The conference SIP URL.
ElementsToExclude	r/w	Elements to exclude from conference invitation email. The following elements may be excluded: <ul style="list-style-type: none"> ■ None ■ MeetingPassword ■ HostKey ■ LocalCallInTollFreeNumber ■ GlobalCallInNumberUrl
MeetingPassword	r/w	The password required to join the WebEx conference.
JoinMeetingUrl	r/w	The URL that attendees will use to join the conference.
HostMeetingUrl	r/w	The URL that the host will use to join the conference.
HostKey	r/w	Specifies the host key, which may be used to pass and reclaim the host role during a WebEx conference.
JoinBeforeHostTime	r/w	Whether participants are allowed to join the conference up to 15 minutes before the scheduled start time.
Telephony	r/w	Phone numbers for joining the conference. The type is WebExTelephony , see below.
TmsShouldUpdateMeeting	r/w	Whether a WebEx meeting originally booked by an external client may be updated by Cisco TMS. If updating the meeting is not possible, the request will return a warning.
SiteUrl	r/w	URL of the WebEx site booked for the conference. This site must already be added to Cisco TMS, or the request will return an error.
UsePstn	r/w	Whether the WebEx site for the conference is set up to use PSTN. When the conference is externally owned (see below), this setting will always be read/overwritten from the WebEx site configured in Cisco TMS.
OwnedExternally	r/w	Whether the WebEx meeting was originally booked by an external client.
Errors	r/w	Errors from WebEx.
Warnings	r/w	Warnings from WebEx.

WebexTelephony

Attribute	Read/Write	Description
LocalCallInTollNumber	r/w	Specifies the backup toll call number.
LocalCallInTollFreeNumber	r/w	Specifies the toll-free call in number.
GlobalCallInNumberUrl	r/w	Specifies a call-in number for out-of-country participants.
PstnDialInNumber	r/w	Number to dial in if using PSTN. This element is required if UsePstn is <i>true</i> .
DtmfSequence	r/w	PSTN only. WebEx format, do not convert. This element is required if UsePstn is <i>true</i> .

For further detail on WebEx configuration and options, see your WebEx Site Administrator's User Guide or online help, linked from your WebEx site.

ConferenceTimeZoneRules

See [Time zone versioning \[p. 10\]](#) for information on how time zones are handled with versions of the API that do not support the model described below.

Booking

When booking a new conference using API version 11 or later, Cisco TMS will:

- Use the time zone rules supplied with the booking, if available and valid.
- Use the time zone of the conference owner in Cisco TMS if no time zone rules are supplied with the booking.

Note that each booking, be it for a single meeting or a series, may only have one set of time zone rules. If different rules are specified for start time and end time, the time zone rules for end time will be ignored.

Updating

When updating a conference:

- Setting the time zone to *null*, once set, is not a valid option. Cisco TMS will keep the original time zone of the conference, even if the conference is being modified by a client or API version that does not support time zone rules.
- Supplying the new time zone rule as part of the Conference object will change the actual time zone of this conference.

Note that modifying the time zone of an existing meeting is only supported through the API, not in the Cisco TMS user interface.

TimeZoneRule

ConferenceTimeZoneRules contains an array of **TimeZoneRule** elements. If a change to DST rules is scheduled for a time zone, the new rule set should be included as early as possible to ensure that conferences scheduled to happen after the rule change will happen at the intended time.

Note that no rules can overlap in time, and no start day can be the same day as the end day of the previous rule.

Each TimeZoneRule element may contain the attributes below.

Attribute	Read/Write	Description
ValidFrom		Use SOAP dateTime to specify the exact time from which the rule is valid. Here, you must use the given time zone's standard time and provide it as a datetime of the unspecified kind, or an exception will be thrown. Do <i>not</i> use UTC or UTC formatting.
Id	optional	Time zone rule set name. The Id must be the same for each TimeZoneRule in the ConferenceTimeZoneRules array. If they are not the same, the last Id will be used.
DisplayName		Time zone rule set description that will be displayed in Cisco TMS for any booking using this rule. Note that there is no mechanism for localizing this, the textual description will be used as-is.
BaseOffsetInMinutes		UTC offset outside of daylight savings time (DST), in minutes. The offset must not exceed 14 hours/-14 hours.
DaylightOffsetInMinutes		Offset from the base offset during DST, in minutes. The sum of this offset and the base offset must not exceed 14 hours/-14 hours. . If set to 0, Cisco TMS will not parse the defined Daylight or Standard rules, but create a rule without DST changes
Daylight	optional	Set for any time zone that has rules for entering (Daylight) and leaving (Standard) DST. The type is TimeChange , see below.
Standard		If either of these fields is undefined/null, and BaseOffsetInMinutes is set as more than 0, Cisco TMS will throw an exception.

TimeChange

Attribute	Read/Write	Description
ChangeSecondAtDay		The exact number of seconds from midnight that the change will occur. Must be between 0 and 86399.
TimeChangeAbsoluteRule	r/w, defining one of these two is mandatory	Used if DST changes happen at fixed dates. Specify the month and the day of the month. <ul style="list-style-type: none"> Valid month values are between 1 and 12. Valid day of the month values are between 1 and 31.
TimeChangeRelativeRule		Used if the DST change date is relative, such as the third sunday of a particular month. Specify the month, the week of the month, and the day of the week. <ul style="list-style-type: none"> Valid month values are between 1 and 12 Day of the week must be between 0 (Sunday) and 6 (Saturday). Default is 0 Week of the month must be between 1 and 5. Default is 5, last week of the month.

If time zone validity rules are violated, the API will throw an exception, see [Error codes and error handling \[p.53\]](#).

Participant

Attribute	Read/Write	Description
ParticipantId	r/w – optional	For Cisco TMS System Entities, this value must be the SystemId of the system. For external participants this value may be set, but is not required. If not set for external participants, Cisco TMS will create an ID with an integer greater than 0.
NameOrNumber	r/w – optional	<p>For external participants, the participant name for dial-ins, or the fully qualified number to dial for dial-outs.</p> <p>For example:</p> <ul style="list-style-type: none">■ A dial-in can be given the value Placeholder for John Doe.■ An ISDN dial-out would be given the value +1 (555) 1231234. This value is required for external dial-out participants, and must be the fully qualified number to dial. <p>Fully qualified numbers are of the format +CC (AC) BN where:</p> <ul style="list-style-type: none">■ CC=Country Code■ AC=Area Code■ BN=Base Number <p>If the country does not use Area Codes, that element can be omitted completely, and the format would be +CC BN.</p>

Attribute	Read/Write	Description
ParticipantCallType	r/w – required	<p>The participant type. Valid values are:</p> <ul style="list-style-type: none"> ■ <i>TMS</i>, a TMS System Entity. When this is specified, the ParticipantId must be the Cisco TMS System Entity ID as given in Cisco TMS. ■ <i>IP Video <-</i> or <i>ISDN Video <-</i>, an IP/ISDN video dial-in. If this is specified, you may give the participant a name using the NameOrNumber field. Cisco TMS will automatically give the participant an ID (less than 0). ■ <i>IP Tel <-</i> or <i>Telephone <-</i>, an IP/ISDN audio dial-in. If this is specified, you may give the participant a name using the NameOrNumber field. Cisco TMS will automatically give the participant an ID (less than 0). ■ <i>IP Video -></i> or <i>ISDN Video -></i>, an IP/ISDN video dial-out site. Specifying this value requires providing Cisco TMS with the number to use in the NameOrNumber field. (Formats: ISDN: +1 (555) 1231234, H.323 IP E.164: 12312321, H323 IP Address: 10.0.0.10). ■ <i>IP Tel -></i> or <i>Telephone -></i>, an IP/ISDN audio dial-out site. If this is specified, you must give Cisco TMS the number to use in the NameOrNumber field (Formats: ISDN: +1 (555) 1231234, H.323 IP E.164: 12312321, H.323 IP Address: 10.0.0.10). Call will be placed using 64kbps/54kbps depending on restrictions. ■ <i>Directory</i>, a Cisco TMS phone book entry. ■ <i>SIP -></i> or <i>SIP <-</i>, a SIP video participant. The value can be a number or a URI. ■ <i>SIP Tel -></i> or <i>SIP Tel <-</i>, a SIP audio participant. The value can be a number or a URI. ■ <i>TMS Master Participant</i>, the conference master. When this entity is specified, the ParticipantId must be the Cisco TMS System Entity ID as given in Cisco TMS. It is only possible to specify a single Master Participant per conference, which must be a Cisco TMS System. <p>The <i>User</i> participant type is not currently supported by the API.</p>

RecurrencePattern

Attribute	Read/Write	Description
FrequencyType	r/w required	<p>The frequency of the recurrence rule.</p> <p>Legal values are:</p> <ul style="list-style-type: none"> ▪ <i>Daily</i> ▪ <i>DailyWeekday</i> ▪ <i>Weekly</i> ▪ <i>Monthly</i> ▪ <i>Default</i> <p><i>Default</i> is used by Cisco TMSXE to identify single telepresence meetings that are part of a non-telepresence series on the client side.</p> <p>Available, but unsupported values are:</p> <ul style="list-style-type: none"> ▪ <i>Secondly</i> ▪ <i>Minutely</i> ▪ <i>Hourly</i> ▪ <i>Yearly</i>
Interval	r/w required	Every X day/week/month as selected by FrequencyType
DaysOfWeek		<p>Days of week in UTC if relevant for your FrequencyType. Valid values are full names of days, capitalized.</p> <ul style="list-style-type: none"> ▪ Set the day if the meeting is to occur on one fixed day of the week. ▪ Set all days for a meeting that occurs every day. ▪ Set all weekdays for a meeting that occurs every weekday. ▪ Set <i>Saturday</i> and <i>Sunday</i> for a meeting that occurs only on weekends.
FirstDayOfWeek		First day of week. Used to split DaysOfWeek into "every X weeks" weekly patterns. The default value is <i>Sunday</i> .
BySetPosition		Relative position of the instance in a pattern. For example, in a monthly pattern, a value of 2 means second day of the month, -1 means last day of the month. The allowed days must be defined in DaysOfWeek . 0 means every X day of the month.
PatternEndType		<p>End type:</p> <ul style="list-style-type: none"> ▪ by number of occurrences ▪ by date ▪ never (not currently supported)
PatternEndDateUTC		In the case where PatternEndType is by date, this gives the end date of the recurrence pattern.

Attribute	Read/Write	Description
FirstOccurrenceRecInstanceUTC		<p>Gives the original start time of the first occurrence of this meeting. If the meeting is not an exception to the recurrence pattern, this time will be the same as the start time of the meeting. If the meeting time for the occurrence has been modified, this string gives the original start time according to the recurrence pattern.</p> <p>This field is only populated by the API when PatternEndType is by number of occurrences.</p>
PatternInstances		<p>In the case where PatternEndType is by number of instances, defines the number of instances to generate from the pattern.</p>
Exceptions		<p>Exceptions to the pattern are supported using the GetRecurrentConferenceById and SaveConference functions. To get a conference with all its exceptions, use GetRecurrentConferenceById.</p> <p>To update a conference with exceptions, use the SaveConference function providing the exceptions in the RecurrencePattern.Exceptions array before saving the conference.</p> <p>As an alternative:</p> <ol style="list-style-type: none"> 1. Use GetConferenceIdByExternalId with RecInstanceUTC (UTC string that points to the UTC day of the instance) to get conference id for the instance. 2. Use SaveConferenceRecInstance to save this exception.

ISDNBandwidth

Attribute	Read/Write	Description
Bandwidth		<p>The ISDN bandwidth that will be used when dialing the conference participants and when creating the conference. Note that <i>Max</i> is not currently supported. Example value 3b/192kbps. If <i>Default</i> is selected, the value is set to the default conference ISDN bandwidth as defined in the Administrator Tools page in Cisco TMS.</p>
IPBandwidth		<p>The IP bandwidth that will be used when dialing the conference participants and when creating the conference. Note that <i>Max</i> is not currently supported. Example value 3b/193kbps. If <i>Default</i> is selected, the value is set to the default conference IP bandwidth as defined in the Administrator Tools page in Cisco TMS.</p>

Conference object XML

The XML document below describes the Conference object.

```
<Conference> <ConferenceId>int</ConferenceId> <Title>string</Title> <StartTimeUTC>string</StartTimeUTC> <EndTimeUTC>string</EndTimeUTC> <RecurrenceInstanceIdUTC>string</RecurrenceInstanceIdUTC> <RecurrenceInstanceType>string</RecurrenceInstanceType> <FirstOccurrenceRecInstanceIdUTC>string</FirstOccurrenceRecInstanceIdUTC> <RecurrencePattern> <FrequencyType>Daily or DailyWeekday or Weekly or Monthly or Yearly or
```

```

    Secondly or Minutely or Hourly or Default</FrequencyType> <Interval>int</Interval> <DaysOfWeek> <DayOfWeek>Sunday or Monday or Tuesday or Wednesday or Thursday or Friday
    or Saturday</DayOfWeek> <DayOfWeek>Sunday or Monday or Tuesday or Wednesday or Thursday
    or Friday
    or Saturday</DayOfWeek> </DaysOfWeek> <FirstDayOfWeek>Sunday or Monday or Tuesday or Wednesday or Thursday or Friday
    or Saturday</FirstDayOfWeek> <BySetPosition>int</BySetPosition> <PatternEndType>EndByDate or EndByInstances or EndNever or Default</PatternEndType> <PatternEndDateUTC>string</PatternEndDateUTC> <FirstOccurrenceRecInstanceIdUTC>string</FirstOccurrenceRecInstanceIdUTC> <PatternInstances>int</PatternInstances> <Exceptions> <RecurrenceException xsi:nil="true" /> <RecurrenceException xsi:nil="true" /> </Exceptions> </RecurrencePattern> <OwnerId>long</OwnerId> <OwnerUserName>string</OwnerUserName> <OwnerFirstName>string</OwnerFirstName> <OwnerLastName>string</OwnerLastName> <OwnerEmailAddress>string</OwnerEmailAddress>
    <ConferenceType>Reservation Only or Automatic Call Launch or Manual Call Launch
    or Default or Ad-Hoc conference or One Button To Push</ConferenceType> <Bandwidth>1b/64kbps or 2b/128kbps or 3b/192kbps or 4b/256kbps or 5b/320kbps
    or 6b/384kbps or 8b/512kbps or 12b/768kbps or 18b/1152kbps or 23b/1472kbps
    or 30b/1920kbps or 32b/2048kbps or 48b/3072kbps or 64b/4096kbps or Max or
    Default</Bandwidth> <PictureMode>Continuous Presence or Enhanced CP or Voice Switched
    or Default</PictureMode> <Encrypted>Yes or No or If Possible or Default</Encrypted> <DataConference>Yes or No or If Possible or Default</DataConference> <ShowExtendOption>Yes or
    No or Default or AutomaticBestEffort</ShowExtendOption> <Password>string</Password> <BillingCode>string</BillingCode> <ISDNRestrict>boolean</ISDNRestrict> <ConferenceInfoText>string</ConferenceInfoText> <UserMessageText>string</UserMessageText> <ExternalSourceId>string</ExternalSourceId> <ExternalPrimaryKey>string</ExternalPrimaryKey> <Participants> <Participant> <ParticipantId>int</ParticipantId> <NameOrNumber>string</NameOrNumber> <ParticipantCallType>TMS or IP Video <- or IP Tel <- or ISDN Video <-
    or Telephone <- or IP Video -> or IP Tel -> or ISDN Video ->
    or Telephone -> or Directory or User or SIP <- or SIP -> or SIP Tel <-
    or SIP Tel-> or 3G <- or 3G -> or TMS Master Participant
    </ParticipantCallType> </Participant> <Participant> <ParticipantId>int</ParticipantId> <NameOrNumber>string</NameOrNumber> <ParticipantCallType>TMS or IP Video <- or IP Tel <-
    or ISDN Video <-
    or Telephone <- or IP Video -> or IP Tel -> or ISDN Video ->
    or Telephone -> or Directory or User or SIP <- or SIP -> or SIP Tel <-
    or SIP Tel-> or 3G <- or 3G -> or TMS Master Participant
    </ParticipantCallType> </Participant> </Participants> <RecordedConferenceUri>string</RecordedConferenceUri> <ExternalConference> <WebEx> <MeetingKey>string</MeetingKey> <SipUrl>string</SipUrl> <MeetingPassword>string</MeetingPassword> <JoinMeetingUrl>string</JoinMeetingUrl> <HostMeetingUrl>string</HostMeetingUrl> <HostKey>string</HostKey> <JoinBeforeHostTime>string</JoinBeforeHostTime> <Telephony xsi:nil="true" /> <Errors xsi:nil="true" /> </WebEx> </ExternalConference> <WebConferencePresenterUri>string</WebConferencePresenterUri> <WebConferenceAttendeeUri>string</WebConferenceAttendeeUri> <ISDNBandwidth> <Bandwidth>1b/64kbps or 2b/128kbps or 3b/192kbps or 4b/256kbps or
    5b/320kbps or 6b/384kbps or 8b/512kbps or 12b/768kbps or 18b/1152kbps
    or 23b/1472kbps or 30b/1920kbps or 32b/2048kbps or 48b/3072kbps
    or 64b/4096kbps or Max or Default</Bandwidth> </ISDNBandwidth> <IPBandwidth> <Bandwidth>1b/64kbps or 2b/128kbps or 3b/192kbps or 4b/256kbps or
    5b/320kbps or 6b/384kbps or 8b/512kbps or 12b/768kbps or 18b/1152kbps
    or 23b/1472kbps or 30b/1920kbps or 32b/2048kbps or 48b/3072kbps
    or 64b/4096kbps or Max or Default</Bandwidth> </IPBandwidth>
    <ConferenceLanguage>string</ConferenceLanguage> <ConferenceTimeZoneRules> <TimeZoneRule>
    <ValidFromdateTime></ValidFrom <Id>string</Id> <BaseOffsetInMinutes>int</BaseOffsetInMinutes>
    <Daylight xsi:nil="true" />
    <DaylightOffsetInMinutes>int</DaylightOffsetInMinutes> <Standard xsi:nil="true" />
    </TimeZoneRule> </ConferenceTimeZoneRules> </Conference>

```

Booking API functions

This reference section describes all the available functions of the booking API.

DeleteConferenceById

Deletes a conference with the given `ConferenceId` (as defined in Cisco TMS). If the conference is part of a recurring series, the whole series will be deleted.

Supported parameters:

<code>ConferenceId</code>	The <code>ConferenceId</code> of the conference to delete.
---------------------------	--

Returned data: Nothing.

DeleteConferenceRecInstanceById

Deletes an occurrence of a recurring conference with the given `ConferenceId` (as defined in Cisco TMS). This function is typically used when deleting a single meeting in a recurring series.

Supported parameters:

<code>ConferenceId</code>	The <code>ConferenceId</code> of the conference to delete.
---------------------------	--

Returned data: Nothing.

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

EndConferenceById

Ends an ongoing conference with the given `ConferenceId` (as defined in Cisco TMS). The conference will be set to *Finished*, and the end time will be set to the time of execution of the function. This function is typically used to end a running conference from a third party front-end GUI. The function will fail with an error if the conference has not yet started.

Supported parameters:

<code>ConferenceId</code>	The <code>ConferenceId</code> of the conference to delete.
---------------------------	--

Returned data: Nothing.

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

GetConferenceById

Get the available information about a particular conference.

Supported parameters:

<code>ConferenceId</code>	The ID of the conference (Based on Cisco TMS IDs)
---------------------------	---

Returned data: A Conference object based on the `ConferenceId`.

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

GetConferencesForUser

This function returns all conferences owned by a particular user between two dates.

Supported parameters:

UserName	The Cisco TMS user to get bookings for. If no user name is provided (empty string), the logged in user is used.
StartTime	The start date and time of bookings.
EndTime	The end date and time of bookings.
ConferenceStatus	An enumeration of what type of conferences that will be fetched from Cisco TMS. The available types are: <ul style="list-style-type: none"> ■ <i>All</i> ■ <i>AllExceptDeleted</i> ■ <i>Pending</i> ■ <i>Ongoing</i> ■ <i>PendingAndOngoing</i> ■ <i>MeetingRequest</i> ■ <i>Rejected</i> ■ <i>Finished</i> ■ <i>Deleted</i>

Returned data: An array with Conference objects.

The conference objects will not include:

- the list of participants
- WebEx conference information
- recording URIs
- ConferenceInfoHtml or ConferenceInfoText

GetConferenceBookingEventMail

Supported parameters:

Message	A message from the client to inject into the email notification. Contains: <ul style="list-style-type: none"> ■ A <code>MessageType</code> which determines the color and prefix of the message box at the top of the email message. Supported values are <i>Information</i> (green), <i>Warning</i> (yellow), and <i>Error</i> (red). ■ One or more lines of text strings containing the actual message.
----------------	--

ContentTypes Determines whether the email notification will be sent as *PlainText* or *Html*.

Language A list of supported languages can be gotten from the Remote Setup API. See [GetConferenceLanguages \[p.28\]](#).

Returned data: A list of conference booking event e-mail content. Setting Language to blank will return the conference language.

GetConferenceIdByExternalId

This function is used to look up a conference that has been updated in the external source, and that must be updated in Cisco TMS. The **ExternalSourceId** and **ExternalPrimaryKey** fields must have been provided with the initial performance of the SaveConference function.

This function is typically used when information about a conference reserved in the external application is needed. First this function is call to get the corresponding conference is Cisco TMS. The GetConferenceById is used to get information about the conference from Cisco TMS.

Supported parameters:

ExternalSourceId	Unique identifier of the external source (server IP address).
ExternalConferenceId	Unique identifier of the conference within the external source (primary key in database).
RecurrenceIdUTC	Identifies an instance in a series of conferences. A UTC-formatted datetime string. Only UTC times, ending with Z, are supported. Example: 1975-06-0123:32:11Z.

Returned data: A ConferenceId, as defined in Cisco TMS.

GetConferenceInviteMail

Use this to get Cisco TMS to send conference invites, which may embed messages from the client.

Supported parameters:

Messages	You can inject one or more messages from the client into the invitation email. The following message types are supported: <ul style="list-style-type: none"> ■ Information: Will be presented on a green background if sent as HTML. ■ Warning: Will be presented on a yellow background if sent as HTML. ■ Error: Will be presented on a red background if sent as HTML.
-----------------	---

ContentTypes PlainText or Html

Language A list of supported languages is in the remote setup API. See [GetConferenceLanguages \[p.28\]](#)

Returned data: A list of conference invitation e-mail content. Setting Language to blank will return the conference language.

GetConferencesForSystems

This function returns all conferences for a list of systems between two dates. It is typically used to build a display of resource availability information in external application for a specific system when the external application does not store its own resource availability information.

The function should be used with caution. If a large number of conferences are booked between the two dates in Cisco TMS, it will take a long time to process the result of this function.

Supported parameters:

SystemIds	An array of IDs of the systems, based on Cisco TMS IDs.
StartDate	The start date of bookings
EndDate	The end date of bookings
ConferenceStatus	An enumeration of the type of conferences that will be fetched from Cisco TMS. The available types are: <ul style="list-style-type: none"> ■ <i>All</i> ■ <i>AllExceptDeleted</i> ■ <i>Pending</i> ■ <i>Ongoing</i> ■ <i>PendingAndOngoing</i> ■ <i>MeetingRequest</i> (Conference has been requested by a user without booking rights, needs approval.) ■ <i>Finished</i> ■ <i>Deleted</i>

Returned data: An array with Conference objects. As of API version 11, this includes scheduled conferences only, no ad hoc conferences.

The conference objects will not include:

- the list of participants
- WebEx conference information
- recording URIs
- ConferenceInfoHtml or ConferenceInfoText

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

GetDefaultConference

Creates a default conference object with ID equals -1 based on the conference settings specified in Cisco TMS.

This function is typically used as a basis for new meetings, where all that is needed is to define the start and end time, along with the participants in the conference.

Supported parameters: None

Returned data: A Conference object using the default values defined in Cisco TMS.

- The start time of the conference is set to the current time.
- The end time is set to the start time + **Default Scheduled Call Duration (in minutes)** as configured in **Administrative Tools > Configuration > Conference Settings**.
- If, in **Administrative Tools > Configuration > WebEx Settings**, the setting for **Add WebEx To All Conferences** is Yes, the default conference will always include WebEx, whether or not this is exposed to the user by the client. For more information about including WebEx, see [ExternalConference \[p.37\]](#).

GetRecordingAliases

Supported parameters:

UserName The user to retrieve recording alias for. If no UserName is provided (empty string), the logged in user will be used.

Returned data: An array of RecordingDevice, where the key is the string representation of a recording device name, or a recording cluster name. The value is an array of AliasInfo for that particular recording device/cluster, holding an AliasId (string) and a SystemId (int) . The AliasId and SystemId can be used to add a recording participant to a conference.

GetRecurrentConferenceById

Returns a Conference object with the given Conferenceld. If the conference is a recurrent conference, existing exceptions to the recurrent series are returned in the RecurrencePattern Exceptions array of the returned Conference object.

Supported parameters:

ConferenceId The ID of the conference, based on TMS IDs.

Returned data: A Conference object based on the Conferenceld.

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

GetTimeZoneRulesById

Get the available time zone rules for the given time zone.

Supported parameters:

idString A string containing the ID of the time zone on the Cisco TMS server.

Returned data: An array of TimeZoneRule elements

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

GetTransactionsSince

This function is used to get a list of conference creations, updated and deletions that must be performed in order to keep a mirrored conference database synchronized. The transaction identified as **CurrentTransactionId** will not be included in the array.

Supported parameters:

CurrentTransactionId	The transaction ID of the last committed transaction of the last synchronization.
-----------------------------	---

Returned data: An array of transactions since the **CurrentTransactionId**.

If the provided ID does not exist, this will cause an error. See the section [Error codes and error handling \[p.53\]](#).

SaveConference

This function saves a conference in Cisco TMS.

- If **ConferenceId** is not set, a new conference is created and saved.
- If **ConferenceId** is set, the existing conference is updated. If the provided ID is incorrect, an error is caused. See the section [Error codes and error handling \[p.53\]](#).

The function will fail in both of the following scenarios:

- One or more of the participants are already booked in the same time period.
- A call route is to be made, but no call route could be found.

If this function is performed on a recurring conference, the entire series is affected.

Supported parameters:

Conference	The Conference object to be created/updated.
-------------------	--

Returned data: A Conference object updated with actual values saved in Cisco TMS.

SaveConferenceRecInstance

Saves an instance of a recurring conference in Cisco TMS. Similar to SaveConference.

Supported parameters:

Conference	The Conference object to be created/updated
-------------------	---

Returned data: A Conference object updated with actual values saved in Cisco TMS.

SaveConferences

Saves a list of conferences to Cisco TMS, with the option to save either all or none depending on availability information.

Use this function if the recurrence pattern of the Conference object does not support the recurrence model in the external application.

Supported parameters:

Conference	An array of conference objects.
oneTransaction	<i>True</i> if the objects should be booked as one transaction, meaning that either all or none of the meetings will be booked depending on the free/busy information. Currently only <i>true</i> is supported for this function.

Returned data: An array of Conference objects updated with actual values saved in Cisco TMS.

Error codes and error handling

This chapter provides an overview of the available error codes as well as an error handling example.

Error codes	54
Error handling	56

Error codes

Error	Code	Description
LICENSE	-2147219503	Client attempts to book more systems than there are licenses for.
DATABASE_DOWN	-2147219500	There is a problem with the Cisco TMS database.
MEETINGNOTFOUND	-2147218302	Client tries to access (get or update) a conference that does not exist.
SYSTEMNOTFOUND	-2147218301	Client tries to access (get or update) a system/participant that does not exist in Cisco TMS.
SYSTEM_ALREADY_BOOKED	-2147218300	Client tries to schedule a participant that has already been scheduled.
SYSTEM_NOT_ALLOWED_IN_BOOKING	-2147218262	Client tries to book a system that the user does not have booking rights for, or the system has Allow Bookings set to <i>False</i> .
MEETINGNOTACTIVE	-2147218272	Client tries to end a conference that is not active.
MEETINGISDELETED	-2147218271	Client tries to end a conference that has been deleted.
MEETINGACTIVE	-2147218270	Client tries to modify the start time of a conference that is already active.
CANNOTBOOKINTHEPAST	-2147218269	Client tries to book a conference with an end time that is in the past.
NO_ACCESS_TO_CONFERENCE	-2147218266	Client tries to get a conference, but the user does not have the permissions in Cisco TMS to read all conferences.
START_TIME_AFTER_MAX_NUMBER_OF_DAYS_IN_FUTURE	-2147218265	Client tries to save a outside of the booking window set in Cisco TMS.
NEVER_ENDING_RECURRENCE_NOT_SUPPORTED	-2147218264	Client tries to save a conference with a "NeverEnding" recurrence end type, which is not supported.
START_TIME_AFTER_END_TIME	-2147218263	Client tries to save a conference where the start time is later than the end time.
INVALID_TIMEZONE_INFO	-2147218268	The specified time zone information is not valid.
WEBEX_SITE_NOT_FOUND	-2147218267	No WebEx site connected to user in Cisco TMS.
WEBEX_ERROR	-2147218260	Any other error regarding WebEx.
SECURITY	-2147218259	Client tries to modify or delete a conference, but the user does not have the required permissions in Cisco TMS.
SERVER_BUSY	-2147218258	Cisco TMS is currently unable to handle client's request to save a conference.
UNKNOWN	-2147218261	Any exception not covered by other error codes.

If an exception is thrown, the exception message will contain the reason. If you get an Unspecified Exception/Unspecified Error, this usually means that there is a syntax flaw in the conference sent to the SaveConference function. In such a case, an error description would be given in the Cisco TMS log files,

which you can download from the Cisco TMS website, or locate in the folder **(/tms/data/logs/tmsdebug/log-web.txt)** on the Cisco TMS server.

Error handling

If the Cisco TMS server is operational with the proper licenses, errors are caused by sending the wrong parameters to the API, such as trying to create a booking in the past, or trying to get systems, users, or conferences from Cisco TMS using the wrong ID. When an exception is caught, it is generally an indication that the client call must be changed before it is sent again.

Exceptions

All errors generated from the API are SoapExceptions, hence each time a save operation is performed against the API, the code should handle exceptions of type SoapException.

The message field of the exception will contain a string with a description of what went wrong. In many cases, displaying this information to the user will be helpful.

HTTP error 401

The server will normally return the HTTP error code 500 Internal Server Error for the SoapExceptions.

If the HTTP error code 401 Unauthorized is received, the user credentials supplied were not authorized to access the server.

Code examples

This chapter provides examples of how to apply the remote setup API and the booking API in your development.

Code examples are provided in C#.

Remote setup API examples	58
Booking API setup	59
Using different participant types	60
Booking API example with a recording participant	61
Saving and updating recurrent conferences	62
Time zone handling	63
Error handling examples	65

Remote setup API examples

The code snippet below demonstrates how to authenticate with the remote setup API.

```
public void InitRemoteSetupService ()
{
    // Specify username and password to authenticate to service.
    // (Can also be done in web.config)
    NetworkCredential credentials = new NetworkCredential("username", "password", "domain");

    remoteSetupService = new RemoteSetupService { Credentials = credentials };
    if (remoteSetupService.ExternalAPIVersionSoapHeaderValue == null)
    {
        remoteSetupService.ExternalAPIVersionSoapHeaderValue = new RemoteSetupServiceWS.ExternalAPIVersionSoapHeader();
    }
    remoteSetupService.ExternalAPIVersionSoapHeaderValue.ClientVersionIn = 11;
}
```

The code snippet below demonstrates how to loop through all systems in Cisco TMS, and display information about each system.

```
public void DisplaySystemInformation()
{
    InitRemoteSetupService();
    // Get all systems from TMS
    RemoteSetupServiceWS.TMSSystem[] tmsSystems = remoteSetupService.GetSystems();
    // Loop through the systems and output information about each system foreach (RemoteSetupServiceWS.TMSSystem tmsSystem in tmsSystems)
    {
        Console.Out.WriteLine("SystemId: " + tmsSystem + " System Name:" + tmsSystem.SystemName);
    }
}
```

Booking API setup

The code snippet below demonstrates how to authenticate with Cisco TMSBA and specify the version.

```
public void InitBookingService ()
{
    // Specify username and password to authenticate to service.
    // (Can also be done in web.config)
    NetworkCredential credentials = new NetworkCredential("username", "password", "domain");

    bookingService = new BookingService {Credentials = credentials};
    if (bookingService.ExternalAPIVersionSoapHeaderValue == null)
    {
        bookingService.ExternalAPIVersionSoapHeaderValue = new ExternalAPIVersionSoapHeader();
    }
    bookingService.ExternalAPIVersionSoapHeaderValue.ClientVersionIn = 11;
}
```

Using different participant types

When using the API as a web reference, the participant types, such as "IP Video", "ISDN Video", and so on are created as enumerations called, for example, `IPTe1`, `IPTe11`. Values ending in 1 are dial-out, values not ending in 1 are dial-ins.

The code snippet below shows how to create a conference with three different participant types. An MCU is required for this call to be saved.

```
public void SaveConferenceWithVariousParticipantTypes()
{
    InitBookingService();
    // Get a default conference object from TMS, where most common values are set
    // (using default values specified in TMS)
    Conference conference = bookingService.GetDefaultConference();

    // Create and initialize an array of conference participants, and add it to the conference
    conference.Participants = new[]
    {
        new Participant
        {
            // Adds a SIP Dial-in participant
            NameOrNumber = "SIP Dial-in 1", ParticipantCallType = ParticipantType.SIP
        },
        new Participant
        {
            // Adds a SIP Dial-out participant
            NameOrNumber = "manager1@example.com", ParticipantCallType = ParticipantType.SIP1
        },
        new Participant
        {
            // Adds a TMS participant (endpoint)
            ParticipantCallType = ParticipantType.TMS, ParticipantId = 4
        }
    };

    // Save the conference, saving the returned conference (where all values are now specified)
    conference = bookingService.SaveConference(conference);

    PrintConferenceInformation(conference);
}
```

Booking API example with a recording participant

The code snippet below demonstrates how to create a conference with two participants. One of the participants is a recording participant, the other a video system registered in TMS.

```
public void SaveConferenceWithRecordingParticipant ()
{
    InitBookingService ();
    Conference conference = bookingService.GetDefaultConference ();

    // Create the elements of the array (the actual participants)
    // Create one dial-out participant
    Participant dialOutParticipant = new Participant {ParticipantCallType = ParticipantType.IPVideol, NameOrNumber = "10.0.1.2"};
    // Get the recording aliases for the logged in user
    RecordingDevice[] recordingDevicesWithAliases = bookingService.GetRecordingAliases ("");
    Participant recordingParticipant = new Participant ();
    bool foundAliasInformation = false;
    if (recordingDevicesWithAliases != null && recordingDevicesWithAliases.Any ())
    {
        // use the first recording device in the array
        var recordingAlias = recordingDevicesWithAliases.First ();
        if (recordingAlias.Aliases != null && recordingAlias.Aliases.Any ())
        {
            foundAliasInformation = true;
            // use the first alias found on the first recording device
            AliasInfo aliasInfo = recordingAlias.Aliases.First ();
            recordingParticipant.ParticipantCallType = ParticipantType.TMS;
            recordingParticipant.ParticipantId = aliasInfo.SystemId;
            recordingParticipant.NameOrNumber = aliasInfo.AliasId;
        }
    }

    if (foundAliasInformation)
    {
        conference.Participants = new []
        {
            dialOutParticipant,
            recordingParticipant
        };
    }
    else
    {
        // no alias information found in TMS
        conference.Participants = new []
        {
            dialOutParticipant
        };
    }

    // Save the conference, saving the returned conference (where all values are now specified)
    conference = bookingService.SaveConference (conference);

    PrintConferenceInformation (conference);
}
}
```

Saving and updating recurrent conferences

The code snippet below demonstrates how to save/update a conference series.

```
public void SaveAndUpdateRecurrentConference ()
{
    InitBookingService ();
    Conference conference = bookingService.GetDefaultConference ();

    // Set the conference to start in the future (default is now)
    var start = DateTime.Now.AddHours (1);
    var end = start.AddMinutes (10);

    conference.StartTimeUTC = start.ToString ("u");
    conference.EndTimeUTC = end.ToString ("u");

    conference.Participants = new []
    {
        new Participant { ParticipantCallType = ParticipantType.SIP, NameOrNumber = "Sip dial-in 1" },
        new Participant { ParticipantCallType = ParticipantType.SIP, NameOrNumber = "Sip dial-in 2" }
    };

    // setup the recurrence pattern
    conference.RecurrencePattern = new RecurrencePattern
    {
        FrequencyType = RecurringFrequency.Daily,
        PatternEndType = RecurrenceEndType.EndByInstances,
        PatternInstances = 10,
    };

    // Save the conference, saving the returned conference (where all values are now specified)
    conference = bookingService.SaveConference (conference);

    // update the conference, change the pattern from Daily to Weekly and change from 10 instances to 5
    conference.RecurrencePattern = new RecurrencePattern
    {
        FrequencyType = RecurringFrequency.Weekly,
        PatternEndType = RecurrenceEndType.EndByInstances,
        PatternInstances = 5,
    };

    conference = bookingService.SaveConference (conference);

    PrintConferenceInformation (conference);
}
```

Time zone handling

The code snippets in this section demonstrate how to save a regular and a custom set of time zone rules.

Regular time zone

```
public void SaveConferenceWithRegularTimeZone()
{
    InitBookingService();
    Conference conference = bookingService.GetDefaultConference();
    var start = DateTime.Now.AddHours(1);
    var end = start.AddMinutes(10);

    conference.StartTimeUTC = start.ToString("u");
    conference.EndTimeUTC = end.ToString("u");

    conference.RecurrencePattern = new RecurrencePattern
    {
        FrequencyType = RecurringFrequency.Daily,
        Interval = 1,
        PatternEndType = RecurrenceEndType.EndByInstances,
        PatternInstances = 3,
    };

    try
    {
        TimeZoneRule[] timeZoneRules = bookingService.GetTimeZoneRulesById("Central Standard Time");
        if (timeZoneRules != null && timeZoneRules.Length > 0)
        {
            conference.ConferenceTimeZoneRules = timeZoneRules;
            conference = bookingService.SaveConference(conference);

            PrintConferenceInformation(conference);
        }
    }
    catch (Exception)
    {
        Console.WriteLine("TMS did not return any time zone information for given time zone id");
    }
}
```

Custom time zone

```
public void SaveConferenceWithCustomTimeZone()
{
    Conference conference = bookingService.GetDefaultConference();
    var start = DateTime.Now.AddHours(1);
    var end = start.AddMinutes(10);

    conference.StartTimeUTC = start.ToString("u");
    conference.EndTimeUTC = end.ToString("u");

    conference.RecurrencePattern = new RecurrencePattern
    {
        FrequencyType = RecurringFrequency.Daily,
        Interval = 1,
        PatternEndType = RecurrenceEndType.EndByInstances,
```

```
        PatternInstances = 10,
    };

    conference.ConferenceTimeZoneRules = new[]
    {
        new TimeZoneRule
        {
            Id = "My custom rule",
            BaseOffsetInMinutes = 60,
            DaylightOffsetInMinutes = 60,
            ValidFrom = DateTime.MinValue,
            Daylight = new TimeChange
            {
                ChangeSecondAtDay = 2*60*60, // Daylight changes at 02:00 am
                AbsoluteRule = new TimeChangeAbsoluteRule
                {
                    Month = 3,
                    DayOfMonth = 3,
                }
            },
            Standard = new TimeChange
            {
                ChangeSecondAtDay = 10*60*60, //// Daylight changes at 10:00 am
                RelativeRule = new TimeChangeRelativeRule
                {
                    Month = 10,
                    DayOfTheWeek = 0, // Sunday
                    WeekOfTheMonthIndex = 5, // Last
                }
            }
        }
    };
    conference = bookingService.SaveConference(conference);

    PrintConferenceInformation(conference);
}
```

Error handling examples

The following code examples demonstrate how to handle errors generated from API calls.

Conference in the past

Running this code will output the message: "You cannot book a conference in the past".

```
public void HandleError_BookInThePast()
{
    InitBookingService();
    Conference conference = bookingService.GetDefaultConference();
    var start = DateTime.Now.AddHours(-10);
    var end = start.AddMinutes(10);

    conference.StartTimeUTC = start.ToString("u");
    conference.EndTimeUTC = end.ToString("u");

    try
    {
        conference = bookingService.SaveConference(conference);
    }
    catch (SoapException e)
    {
        Console.WriteLine("Got error with error code {0}, and message {1}, from Booking API", e.Detail.
            InnerXml, e.Message);
    }

    PrintConferenceInformation(conference);
}
```

System unavailable

Running the code below will output a "system unavailable" message.

```
public void HandleError_SystemNotAvailable()
{
    InitBookingService();
    Conference conference = bookingService.GetDefaultConference();
    var start = DateTime.Now.AddHours(1);
    var end = start.AddMinutes(10);

    conference.StartTimeUTC = start.ToString("u");
    conference.EndTimeUTC = end.ToString("u");

    Participant participant = new Participant {ParticipantCallType = ParticipantType.TMS, ParticipantId
= 4};

    conference.Participants = new []
    {
        participant
    };
    bookingService.SaveConference(conference);

    try
    {
        // By setting the Id to -1, we try to book a new conference, with the same time and participant
        conference.ConferenceId = -1;
    }
}
```

```
        conference = bookingService.SaveConference(conference);
    }
    catch (SoapException e)
    {
        Console.WriteLine("Got error with error code {0}, and message {1}, from Booking API", e.Detail.
InnerXml, e.Message);
    }

    PrintConferenceInformation(conference);
}

private static void PrintConferenceInformation(Conference conference)
{
    // Output information about the conference.
    Console.Out.WriteLine(conference.ConferenceInfoText);
    Console.Out.WriteLine(conference.UserMessageText);
    Console.Out.WriteLine(conference.ConferenceId);
}
```

Bibliography

All product documentation for the latest versions of Cisco TMS can be found at http://www.cisco.com/en/US/products/ps11338/tsd_products_support_series_home.html.

Title	Reference	Link
<i>SOAP Version 1.2</i>		http://www.w3.org/TR/soap12/
<i>Web Services Description Language (WSDL) 1.1</i>		http://www.w3.org/TR/wsdl
<i>WSDL 1.1 Binding Extension for SOAP 1.2</i>		http://www.w3.org/Submission/wsdl11soap12
<i>Date and Time Formats</i>		http://www.w3.org/TR/NOTE-datetime

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1005R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2013 Cisco Systems, Inc. All rights reserved.