Oracle Field Service Cloud
Integrating with Resource Management API

19C
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</table>
Preface

This preface introduces information sources that can help you use the application and this guide.

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- For tutorial feedback, Tutorial Survey
1 Introduction

Document Purpose

This document is intended to ensure successful interaction between the Resource Management API of Oracle Field Service Cloud (former ETAdirect) and third party systems.

Scope of the Document

This document provides a detailed description of Transaction format and Transaction logic of OFSC Resource Management API.

Target Audience

This document is intended for developers working on integration of third-party systems with OFSC.

Accessing the APIs

To access the Oracle Field Service Cloud Resource Management API, you may import the WSDL using the following URL: https://api.etadirect.com/soap/resource-management/v3/?wsdl.

Note: The Resource Management API has been deprecated and will be removed with the 20A (February 2020) Update. It is recommended to use the REST based Core API for integration.

Glossary

The following terms and explanations should be used for the goals of the document:

<table>
<thead>
<tr>
<th>Term</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Entity of the Oracle Field Service Cloud system that represents any time-consuming activity of the resource</td>
</tr>
<tr>
<td>API</td>
<td>Application Programming Interface – a particular set of rules and specifications that software programs follow to communicate and interact with each other</td>
</tr>
<tr>
<td>Term</td>
<td>Explanation</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bucket</td>
<td>Entity appearing on the resource tree which can contain resources of a defined type and be assigned activities</td>
</tr>
<tr>
<td>Company</td>
<td>1) Legal entity, using Oracle Field Service Cloud</td>
</tr>
<tr>
<td></td>
<td>2) Entity that represents a Client in Oracle Field Service Cloud system; company is created by TOA Technologies during the process of implementation</td>
</tr>
<tr>
<td>Customer</td>
<td>End-customer, entity that benefits from the activity</td>
</tr>
<tr>
<td>Group</td>
<td>Resource of the resource tree which represents a group of resources and cannot execute activities</td>
</tr>
<tr>
<td>Inventory</td>
<td>Equipment that can be installed or deinstalled during an activity</td>
</tr>
<tr>
<td>Property</td>
<td>Field and field value assigned to an entity in Oracle Field Service Cloud (to user, resource, activity or inventory). There are fields and company-defined properties.</td>
</tr>
<tr>
<td>Resource</td>
<td>Element in the resource tree representing a defined company asset</td>
</tr>
<tr>
<td>Resource Tree</td>
<td>Hierarchy of company resources, showing &quot;parent-child&quot; relationships</td>
</tr>
<tr>
<td>SOAP</td>
<td>Lightweight protocol for exchange of information in a decentralized, distributed environment</td>
</tr>
</tbody>
</table>
## Resource Management API Overview

Resource Management API is designed as a means of managing resources and users via the SOAP interface. With the methods of the API it is possible to add and delete users and to create resources in the system, to define, update and retrieve their details. For the sake of convenience the list of all methods that can be implemented with the Mobile Client API and their brief description are provided in the following table. For the details of a specific method please refer to the corresponding section.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Method</th>
<th>Can be used to...</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>insert_user</td>
<td>...add a new user to OFSC</td>
<td>Creates a new user and defines the user properties, resources and profiles assigned to the user</td>
</tr>
<tr>
<td></td>
<td>update_user</td>
<td>...update an existing user</td>
<td>Overwrites the specified user properties, the list of resources and profiles with those specified in the request or defines new user properties</td>
</tr>
<tr>
<td></td>
<td>delete_user</td>
<td>...delete an existing user</td>
<td>Removes the user with the specified login from OFSC</td>
</tr>
<tr>
<td></td>
<td>get_user</td>
<td>...retrieve data of an existing user</td>
<td>Returns properties of the user with the specified login</td>
</tr>
<tr>
<td></td>
<td>get_users_list</td>
<td>...retrieve users assigned to the specified resource</td>
<td>Returns all users assigned to the specified resource and its child resources as well as the users’ properties</td>
</tr>
<tr>
<td>resource</td>
<td>insert_resource</td>
<td>...add a new resource to OFSC</td>
<td>Creates a new resource in OFSC and defines such resource’s properties and the users the resource is assigned to</td>
</tr>
<tr>
<td></td>
<td>update_resource</td>
<td>...update an existing resource.</td>
<td>Overwrites the specified resource properties with those specified in the request or defines new resource properties</td>
</tr>
<tr>
<td></td>
<td>get_resource</td>
<td>...retrieve data of an existing resource</td>
<td>Returns properties of the resource with the specified external ID</td>
</tr>
<tr>
<td></td>
<td>get_resources_list</td>
<td>...retrieve data of all child resources of the specified resource</td>
<td>Returns all child resources of the specified resource with their properties</td>
</tr>
<tr>
<td></td>
<td>set_resources_calendars</td>
<td>...define working calendar of the specified resource</td>
<td>Sets working time, shifts, schedules and non-working time of the specified resource for the specified date</td>
</tr>
</tbody>
</table>
Oracle Field Service Cloud
Integrating with Resource Management API

Chapter 2
Resource Management API Overview

<table>
<thead>
<tr>
<th>Entity</th>
<th>Method</th>
<th>Can be used to...</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>get_resources_calendars</td>
<td>...retrieve working calendar</td>
<td>of the specified</td>
<td>Returns working time, shifts, schedules and non-working time of the specified resource on the specified date</td>
</tr>
<tr>
<td></td>
<td>of the specified resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>set_resources_zones</td>
<td>...define work zones of the</td>
<td></td>
<td>Sets work zones of the specified resource for the specified date</td>
</tr>
<tr>
<td></td>
<td>resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>get_resources_zones</td>
<td>...retrieve work zones of</td>
<td></td>
<td>Returns details of work zones of the specified resource on the specified date</td>
</tr>
<tr>
<td></td>
<td>the specified resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>set_resources_skills</td>
<td>...define work skills of the</td>
<td></td>
<td>Sets work skills of the specified resource for the specified date</td>
</tr>
<tr>
<td></td>
<td>specified resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>get_resources_skills</td>
<td>...retrieve work skills of</td>
<td></td>
<td>Returns work skills of the specified resource on the specified date</td>
</tr>
<tr>
<td></td>
<td>the specified resource</td>
<td></td>
<td></td>
</tr>
<tr>
<td>update_locations</td>
<td>...create or update resources'</td>
<td></td>
<td>Creates a location with the specified label for the specified resource. If a location with the specified 'resource_id' and 'label' exists, such location is updated</td>
</tr>
<tr>
<td></td>
<td>locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>delete_locations</td>
<td>...delete resources' locations</td>
<td></td>
<td>Deletes the locations with the specified labels for the specified resources</td>
</tr>
<tr>
<td>get_locations</td>
<td>...retrieve resources'</td>
<td></td>
<td>Retrieves the locations assigned to the specified resource and, optionally, its child resources</td>
</tr>
<tr>
<td></td>
<td>locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>set_resources_locations</td>
<td>...assign locations to</td>
<td></td>
<td>Assigns 'start', 'end' and 'home zone center' locations to resources or removes the existing location assignments from resources</td>
</tr>
<tr>
<td></td>
<td>resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>get_resources_locations</td>
<td>...retrieve locations assigned</td>
<td></td>
<td>Retrieves 'start', 'end' and 'home zone center' locations assigned to the specified resources</td>
</tr>
<tr>
<td></td>
<td>to resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OFSC API Versioning

Version 3 includes the entire functionality of Versions 1 and 2 as well as new features developed in OFSC version 15.8 and later.

Versioning is implemented by appending ‘v3’ for ‘Version 3’ to the API URL.

Resource Management API URL:

OFSC Entities Related to Resource Management API

To understand how activities are processed in OFSC it is necessary to review some OFSC entities. The basic entities are:

User is the entity that corresponds to a person, group of people or software, accessing OFSC with a single login to the system and specified permissions.

Resource is the entity that represents a company asset such that it or its child resources can perform work for the benefit of a company.

User Entity

A user is an entity that corresponds to a person, group of people or software, accessing OFSC with a single login to the system and specified permissions. Each user in OFSC can manage only the resources assigned to such user.

Profiles

User can be assigned several user profiles that define a set of permissions determining what the user can see and manage in the system. For each user security profiles and display profiles are defined.

A Security Profile defines if access to a certain part of the system, specific interface or function within the interface is permitted. One user may be assigned several profiles and if at least with one of them access is granted, it is available to the user.

As of API Version 3, the user configuration is implemented as security profile and display profiles and API profiles are combined into User Types. Each user is assigned one user type defining such user's access to the system and its components, screens, and APIs.

Self Assignment

The self-assignment feature influences activity and resource availability for a user who is assigned a bucket. By default 'self_assignment' is disabled which is the setting mostly intended for dispatchers – users allocating activities among resources and usually performing no activities themselves.

If a user is assigned a bucket and 'self_assignment' is disabled:

- all child resources of the bucket are available to the user
- all activities in the bucket are available to the user (regardless of their work zones and work skills)
- the user can move all activities between all available resources (e.g. from the bucket to any of the assigned resources, between resources, from a resource back to a bucket)

The 'self_assignment' flag should be checked if a technician is granted permission to assign tasks (e.g. the user is a crew chief, assigning activities to members of the crew or a single technician allowed to choose activity to perform).

If a user is assigned a bucket and 'self_assignment' is enabled:

- only the resources explicitly assigned to the user are available to such user (e.g. the bucket, the user himself and members of the crew). No other child resources of the bucket will be available to the user.
- only those activities in the bucket that can be performed by at least one of available resources (subject to the work zone and work skill requirements) are available to the user.
the user can move only the available activities and only between the available resources

Resource Entity

OFSC is populated with a hierarchical set of resources (Resource Tree). Resource is an entity that represents a person or equipment used by a company, so that it or its child resources can perform work for the benefit of a company. For each resource entity-specific parameters are defined.

Resource Type

Resource type represents a predefined company-specific set of rules applied when processing a resource (e.g. the ability of the resource to have child resources, to be assigned and execute activities, to assist and be assisted by other resources, share data with other resources and interact with different modules of OFSC, etc.).

Calendars

Calendars are assigned to a resource and define the resources availability at specific time and date. Calendars may define:

- Working Time – from-to time period when the resource is available
- Work Shifts – working time with activities within it
- Non-Working Time – time when the resource is not available (e.g. days off)
- Work Schedules – set of working times (shifts and non-working time)

Shift and Working Time Overrides – shift or working time overwriting the previous setting of a resource for a specified time period.

If the same resource at the same level is assigned a work schedule, a shift and a working time, then whenever they overlap, the working time prevails over the shift and the shift prevails over the work schedule. If a resource is assigned an override (both shift or working time) or a non-working time, the one assigned the latest prevails over any other settings defined before.

If a calendar is defined at the level of a parent resource, all subordinate resources will inherit it unless another calendar is explicitly defined for the subordinate resource.

Work Zones

For each resource it is possible to define the work zones where the resource can perform tasks on specific dates and the ratio of the zone preference for the resource. Along with that, a set of rules is defined that enables automatic calculation of the work zone of each activity. An activity should be assigned to a resource that can perform work in the work zone of the activity.

If a work zone is defined at the level of a parent resource, all subordinate resources will inherit it unless another work zone is explicitly defined for the subordinate resource.

Work Skills

For each resource it is possible to define a set of work skills as well as the qualification level for each skill. Along with that, a set of rules is defined that enables automatic calculation of the work skills of each activity, their required and preferable levels. An activity should be assigned to a resource having all of the work skills necessary to perform the activity with qualification level not less than the required level for the activity.

Work Skills are not inherited by subordinate resources.
3 Common Resource Management API Method Structures

Properties and Fields

Property is a variable associated with an OFSC entity. It is much like a field of an object in most programming languages. The Resource Management API processes properties of users (user properties) and properties of resources (resource properties). Every property has a string label by which it is uniquely identified – it can be thought of as a field name and a value. If there is a property of an entity in OFSC, all such entities have this property, and the Resource Management API can read this property, write to it and make conditional decisions based on the property value. Properties initially defined in OFSC are addressed as ‘fields’. If a field and its value is used to indicate a specific user or resource, it is a key field.

File Property

If a file is assigned to an entity, it is called a file property or file. Some properties are initially defined in OFSC and others are customer-specific and created in the course of implementation.

Property Visibility

The way a property will be processed by the Resource API depends on its visibility. A property can be set to hidden and will not be seen in any way by the user. On the other hand, visible properties can be mandatory for the request to be processed correctly or optional.

Optional: the user can see the property and can optionally manage it. The ‘Required’ column contains ‘No’ for such property.

Mandatory:
- the user can see the property and must define it
- if the transaction contains an invalid mandatory property, the request is rejected with a corresponding error
- if request has no mandatory property, the request is rejected with a corresponding error

The ‘Required’ column contains ‘Yes’ for such property.

‘property’ Structure

The ‘property’ structure is used to represent company-specific properties of activities and inventories. It is a simple name-value pair. The ‘property’ structure consists of the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>Yes</td>
<td>string</td>
<td>name of the property, unique for the corresponding property list</td>
</tr>
</tbody>
</table>
Common Resource Management API Method Structures

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>Yes</td>
<td>string</td>
<td>property value, can be an empty string</td>
</tr>
</tbody>
</table>

- 'property' Structure Example

  ```
  <property>
  <label>DOOR_COLOR</label>
  <value>ORANGE</value>
  </property>
  ```

  ✍ Note: if a request contains multiple values for the same property name then the last value is used.

User Properties

The user-related methods deal with properties of a user. In addition to the fields listed in the following table, other user fields existing in the system and company-defined user properties can also be processed.

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>uname</td>
<td>string</td>
<td>user name</td>
</tr>
<tr>
<td>login</td>
<td>ulogin</td>
<td>string</td>
<td>user login</td>
</tr>
</tbody>
</table>

  ✍ Note: The field is used as a user identifier and cannot be updated through API after the user is created.

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>language</td>
<td>ulanguage</td>
<td>enum</td>
<td>user language</td>
</tr>
<tr>
<td>last_login</td>
<td>last_login</td>
<td>DateTime</td>
<td>user last login time (YYYY-MM-DD HH:MM:SS)</td>
</tr>
<tr>
<td>time_zone</td>
<td>su_zid</td>
<td>enum</td>
<td>user time zone</td>
</tr>
<tr>
<td>status</td>
<td>sustatus</td>
<td>enum</td>
<td>user status&lt;br&gt;valid values: 'active', 'inactive'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>password</td>
<td>password</td>
<td>string</td>
<td>user password SHA256 hash</td>
</tr>
<tr>
<td>password_temporary</td>
<td>password_temporary</td>
<td>string</td>
<td>user password temporary flag&lt;br&gt;valid values: 'yes', 'no'&lt;br&gt;default value: 'no'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>user_type_id</td>
<td>string</td>
<td>name of the user type assigned to the user as defined in Manage Company Configuration User Types (available starting from API Version 3)</td>
</tr>
<tr>
<td>Name</td>
<td>Label</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------</td>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>login_attempts</td>
<td>login_attempts</td>
<td>int</td>
<td>allowed number of failed logins to OFSC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>default value: none</td>
</tr>
<tr>
<td>login_policy</td>
<td>login_policy_id</td>
<td>enum</td>
<td>user login policy: customer-specific name of the login policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>default value: company default policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(used only in API Versions 1 and 2)</td>
</tr>
<tr>
<td>login_blocked_to</td>
<td>login_blocked_to</td>
<td>dateTime</td>
<td>date, until which user login is to be blocked in &quot;YYYY-MM-DD HH:MM:SS&quot; format; set to past date to unblock default value: none</td>
</tr>
<tr>
<td>self_assignment</td>
<td></td>
<td>enum</td>
<td>self-assignment feature set to 'yes'/&quot;no&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>default value: 'no'</td>
</tr>
<tr>
<td>main_resource_id</td>
<td>main_resource_id</td>
<td>string</td>
<td>external ID of the main resource</td>
</tr>
<tr>
<td>date_format</td>
<td>sudate_fid</td>
<td>string</td>
<td>date format set for the user</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values: 'dd.mm.yy', 'mm/dd/yy', 'dd/mm/yy'</td>
</tr>
<tr>
<td>time_format</td>
<td>sutime_fid</td>
<td>string</td>
<td>time format set for the user</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values: '12-hour', '24-hour'</td>
</tr>
<tr>
<td>long_date_format</td>
<td>sulong_date_fid</td>
<td>string</td>
<td>long date format set for the user</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values: 'weekday, month day, year', 'weekday day month year'</td>
</tr>
<tr>
<td>week_start</td>
<td>suweek_start</td>
<td>string</td>
<td>day of the week on which the week starts according to the user’s settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values: 'sunday', 'monday', 'tuesday', 'wednesday', 'thursday', 'friday', 'saturday', 'default'</td>
</tr>
<tr>
<td>time_zone_diff</td>
<td>time_zone_diff</td>
<td>int</td>
<td>difference from UTC time in minutes</td>
</tr>
</tbody>
</table>

- 'property' Structure Example

```xml
<property>
  <label>DOOR_COLOR</label>
  <value>ORANGE</value>
</property>
```
Resource Properties

The resource-related methods deal with properties of a resource. In addition to the fields listed in the following table, other resource fields existing in the system and resource properties defined in the specific company can also be processed.

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>external_id</td>
<td>string</td>
<td>resource external ID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Note:</em> The field is used as a resource identifier and cannot be updated through API after the resource is created. This field has a maximum length of 32 characters.</td>
</tr>
<tr>
<td>status</td>
<td>pactive</td>
<td>enum</td>
<td>resource status (active or inactive)</td>
</tr>
<tr>
<td>parent_id</td>
<td>-</td>
<td>string</td>
<td>parent resource external ID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>for the top resource it is equal to 0</td>
</tr>
<tr>
<td>type</td>
<td>ptype</td>
<td>enum</td>
<td>resource type</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>company specific value</td>
</tr>
<tr>
<td>name</td>
<td>pname</td>
<td>string</td>
<td>resource name</td>
</tr>
<tr>
<td>language</td>
<td>planguage</td>
<td>enum</td>
<td>resource language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>company specific language label (EN, FR, etc.)</td>
</tr>
<tr>
<td>email</td>
<td>email</td>
<td>string</td>
<td>resource email</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This field has a maximum length of 255 characters. If you send a longer value in the request, only the first 255 characters will be saved and the rest will be ignored.</td>
</tr>
<tr>
<td>phone</td>
<td>pphone</td>
<td>string</td>
<td>The phone number of the resource. This field has a maximum length of 16 characters. If you provide a longer value in the request, only the first 16 characters will be saved and the rest will be ignored.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Note:</em> From version 17.2.1, the phone number is saved in OFSC with the ‘+’ symbol. For example, if you enter the phone number as +1(234)234-23_42, it is saved in OFSC as +12342342342. In versions before 17.2.1, the phone number is saved as 12342342342.</td>
</tr>
<tr>
<td>time_zone</td>
<td>time_zone</td>
<td>enum</td>
<td>resource time zone</td>
</tr>
</tbody>
</table>
### Common Resource Management API Method Structures

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time_from</td>
<td>-</td>
<td>time</td>
<td>company specific time zone name</td>
</tr>
<tr>
<td>time_from</td>
<td>-</td>
<td>time</td>
<td>HH:MM format</td>
</tr>
<tr>
<td>time_to</td>
<td>-</td>
<td>time</td>
<td>start of resource’s working hours according to the calendar for the specified date (is returned only if the optional valid ‘date’ field is present in the request and the resource has a working day)</td>
</tr>
<tr>
<td>time_to</td>
<td>-</td>
<td>time</td>
<td>HH:MM format</td>
</tr>
<tr>
<td>non_working_reason</td>
<td>-</td>
<td>string</td>
<td>end of resource’s working hours according to the calendar for the specified date (is returned only if the optional valid ‘date’ field is present in the request and the resource has a working day)</td>
</tr>
<tr>
<td>date_format</td>
<td>pdate_fid</td>
<td>enum</td>
<td>if the ‘date’ field is present in the request and the resource has a non-working day on the specified date, the reason will be returned in this field. The reason code is one of the configurable list of constants, e.g. ‘Vacation’</td>
</tr>
<tr>
<td>time_format</td>
<td>ptime_fid</td>
<td>enum</td>
<td>date format set for the resource</td>
</tr>
<tr>
<td>workskill</td>
<td>resource_workskills</td>
<td>string</td>
<td>time format set for the resource</td>
</tr>
<tr>
<td>workskill_group</td>
<td>-</td>
<td>string</td>
<td>work skill defined in OFSC which the resource has</td>
</tr>
<tr>
<td>workskill_group</td>
<td>-</td>
<td>string</td>
<td>work skill group defined in OFSC which the resource has</td>
</tr>
</tbody>
</table>

### User Authentication Structure

All API methods use the ‘user’ structure as authentication to determine the permissions of the Oracle Field Service Cloud client company user.

All customers can use the Client_ID and Client_Secret instead of login and password to populate the User Authentication Structure with credentials:

1. Register an application.
   a. In the Field Service Cloud Manage interface, click Configuration and select Applications.
   b. In the left pane, click the plus icon to open the New application window, specify the Application Name and Application ID, and click Submit.
   c. Under Authentication settings, select the Authenticate using Client ID/Client Secret check box.
   d. Click Save.
2. Select the application and under Authentication settings section, click Show Client ID / Client secret to view the Client ID and Client Secret.

The following table describes the Oracle Field Service Cloud SOAP authentication structure mandatory fields.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>now</td>
<td>string</td>
<td>current time in ISO 8601 format</td>
</tr>
<tr>
<td>company</td>
<td>string</td>
<td>case-insensitive identifier of the Client for which data is to be retrieved. provided by Oracle during integration.</td>
</tr>
<tr>
<td>login</td>
<td>string</td>
<td>The client ID of the application.</td>
</tr>
<tr>
<td>auth_string</td>
<td>string</td>
<td>authentication hash; The value of this field must be computed as follows: auth_string = SHA256(now + SHA256(CLIENT_SECRET+SHA256(CLIENT_ID)));</td>
</tr>
</tbody>
</table>

For example:

```
<user>
<now>CURRENT_TIME</now>
<login>CLIENT_ID</login>
<company>INSTANCE_NAME</company>
<auth_string>SHA256(CURRENT_TIME + SHA256(CLIENT_SECRET + SHA256(CLIENT_ID)))</auth_string>
</user>
```

**Authentication**

The 'user' structure is used for the request authentication. The relevant error is returned if the authentication fails.

<table>
<thead>
<tr>
<th>Number</th>
<th>Login</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>now</td>
<td>is different from the current time on the server and this difference exceeds the predefined time-window (30 minutes by default)</td>
</tr>
<tr>
<td>2</td>
<td>company</td>
<td>cannot be found in the Oracle Field Service Cloud</td>
</tr>
<tr>
<td>3</td>
<td>login</td>
<td>cannot be found for this company</td>
</tr>
<tr>
<td>4</td>
<td>application is not authorized to use this API</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>auth_string</td>
<td>when auth_string is not equal to: SHA256(now + SHA256(CLIENT_SECRET +SHA256(CLIENT_ID)));</td>
</tr>
</tbody>
</table>

Otherwise authentication is successful and the request is processed further.
4 Detailed Methods Description

User-related Methods

'insert_user' Method (Enhanced in API Versions 2 and 3)

The 'insert_user' method is used to add a new user. For each user being created, the user properties and resources assigned must be defined. Profiles assigned to the user must also be defined upon creation.

'insert_user' Request

The 'insert_user' method must define the login of the user and the properties and resources to be assigned to the user. It must also define the profiles to be assigned to the user created as the result of the request.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>login</td>
<td>Yes</td>
<td>string</td>
<td>login of the user to be added</td>
</tr>
<tr>
<td>properties</td>
<td>Yes</td>
<td>array</td>
<td>array of user 'property' nodes ('name' and 'value'). Please check the specific properties for visibility.</td>
</tr>
<tr>
<td>resources</td>
<td>Yes</td>
<td>array</td>
<td>array of 'id' elements that contain identifiers of resources to be assigned to the user</td>
</tr>
</tbody>
</table>

- 'properties' Array of 'insert_user' Request

The following user properties are mandatory in the 'insert_user' request:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| status   | Yes      | enum   | user status
valid values: 'active', 'inactive |
| name     | Yes      | string | user name                                                                   |
| password | Yes      | string | user password SHA256 hash                                                  |
| type     | Yes      | string | name of the user type assigned to the user as defined in Manage & Configuration User Types (available starting from API Version 3) Note: the requesting user (the user defined by the 'user' structure) must have the user type specified by the 'type' property among those selected in the 'Can create' role.
users of the following user types’ field (Manage ☐ Company Configuration ☐ Types ☐ General), otherwise the request returns an error.

<table>
<thead>
<tr>
<th>Language</th>
<th>Yes</th>
<th>Enum</th>
<th>User language: customer-specific language label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Zone</td>
<td>Yes</td>
<td>Enum</td>
<td>User time zone: customer-specific time zone name</td>
</tr>
</tbody>
</table>

Other user properties are optional.

- `'insert_user' Request Example (API Version3)`

```xml
                     xmlns:nsl="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <nsl:insert_user>
      <user>
        <now>2014-05-19T13:50:10Z</now>
        <login>soap</login>
        <company>sunrise</company>
        <auth_string>7160f16f31540cc07128404a8d878e69</auth_string>
      </user>
      <login>test_user</login>
      <properties>
        <property>
          <name>status</name>
          <value>active</value>
        </property>
        <property>
          <name>password</name>
          <value>c4ca4238a0b92b928a097591b5c50c81</value>
        </property>
        <property>
          <name>name</name>
          <value>test_insert_user</value>
        </property>
        <property>
          <name>language</name>
          <value>en</value>
        </property>
        <property>
          <name>time_zone</name>
          <value>Pacific</value>
        </property>
        <property>
          <name>type</name>
          <value>user_type_34</value>
        </property>
      </properties>
      <resources>
        <id>22</id>
      </resources>
    </nsl:insert_user>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

- `'insert_user' Response`

The `'insert_user' response contains data on the method success/failure.
## 'update_user' Method (Enhanced in API Versions 2 and 3)

The 'update_user' method overwrites the user properties specified in the request with the user property values defined in the request and deletes all resources and profiles assigned to the user and overwrites them with the resources and profiles defined in the request.

In addition to the predefined set of user properties existing in OFSC, the Resource Management API can add or update user properties. These actions are subject to the visibilities set in the corresponding display profile.

### 'update_user' Request

The 'update_user' method defines the properties and resources to be added or updated for the user. They can also define the profiles to be assigned to or updated for the user. Any properties not sent in the 'update_user' request remain unchanged.

The 'update_user' request must contain the user login to be used as a search key to find the user for which data is to be updated.

The 'update_user' request contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>login</td>
<td>Yes</td>
<td>string</td>
<td>login of the user to be added</td>
</tr>
<tr>
<td>properties</td>
<td>No</td>
<td>array</td>
<td>array of user 'property' nodes ('name' and 'value'). Please check the specific properties for visibility.</td>
</tr>
<tr>
<td>resources</td>
<td>No</td>
<td>array</td>
<td>array of 'id' elements that contain identifiers of resources to be assigned to the user</td>
</tr>
</tbody>
</table>
The 'update_user' request may optionally contain user fields and properties, profiles and resources to be updated as the result of the request. Please refer to the list of user properties which may be updated by the 'update_user' method.

**Note:** If a certain value does not have to be updated, it should be excluded from the request. To update the values, the node should be added to the request. New values will overwrite the previous ones. An empty node will erase the existing values.

### 'update_user' Response

The 'update_user' response contains data on the method success/failure.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
</tbody>
</table>

- **'insert_user' Response Example**

  ```xml
  xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
  <ns1:update_user_response>
    <result_code>0</result_code>
  </ns1:update_user_response>
  </SOAP-ENV:Body>
  </SOAP-ENV:Envelope>
  ```

### 'delete_user' Method

The 'delete_user' method is used to delete an existing user. User login and all settings defined for the user are deleted.

- **'delete_user' Request**

  The 'insert_user' method must define the login of the user and the properties and resources to be assigned to the user. It must also define the profiles to be assigned to the user created as the result of the request.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>login</td>
<td>Yes</td>
<td>string</td>
<td>login of the user to be added</td>
</tr>
</tbody>
</table>

- **'delete_user' Request Example**

  ```xml
  xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
  <ns1:delete_user>
    <user>
      <now>2014-05-19T13:50:15Z</now>
    </user>
  </ns1:delete_user>
  </SOAP-ENV:Body>
  </SOAP-ENV:Envelope>
  ```
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'delete_user' Response
The 'delete_user' response contains data on the method success/failure.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
</tbody>
</table>

'delete_user' Response Example

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
  <ns1:delete_user_response>
   <result_code>0</result_code>
  </ns1:delete_user_response>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

'get_user' Method (Enhanced in API Versions 2 and 3)
The 'get_user' method is used to retrieve information of a specified existing user.

'get_user' Request
The 'get_user' requests specify the login to be used to find the user whose data is to be retrieved.

The 'get_user' requests contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>login</td>
<td>Yes</td>
<td>string</td>
<td>login of the user to be added</td>
</tr>
</tbody>
</table>

'get_user' Response
The 'get_user' response contains data on the method success/failure and the properties of the user specified in the request.
### 'get_users_list' Method

The 'get_users_list' method is used to retrieve information (set of predefined properties) for the list of users assigned to the current resource.

### 'get_users_list' Request

The 'get_users_list' requests specify the external ID of the resource for which the assigned users' data is to be retrieved and the properties to be returned for such users, and contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>root_resource_id</td>
<td>Yes</td>
<td>string</td>
<td>external ID of the resource for which the assigned users' data is to be retrieved</td>
</tr>
<tr>
<td>required_properties</td>
<td>No</td>
<td>array</td>
<td>array of the 'label' elements that correspond to 'names' of user properties to be returned. If empty or omitted, the users' logins and statuses will be returned.</td>
</tr>
<tr>
<td>select_from</td>
<td>No</td>
<td>int</td>
<td>the area of the list of found users to return data from; users in the list starting with 'select_from' are returned</td>
</tr>
<tr>
<td>select_count</td>
<td>No</td>
<td>int</td>
<td>total number of users to be returned</td>
</tr>
</tbody>
</table>

- **'get_users_list' Request Example**

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:get_users_list>
      <user>
        <now>2014-05-19T13:50:31Z</now>
      </user>
    </ns1:get_users_list>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
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'get_users_list' Response
The response to 'get_users_list' contains data on the method success/failure, the count of users found by the request and their properties. The response of 'get_users_list' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>users</td>
<td>array</td>
<td>array of 'user' elements each consisting of a 'properties' array containing the properties of a single user assigned to the specified resource</td>
</tr>
<tr>
<td>user_count</td>
<td>int</td>
<td>total number of the users assigned to the resource</td>
</tr>
</tbody>
</table>

'get_users_list' Response Example

```
   xmlns:ns1="urn:toatech:ResourceManagement:1.0">
   <SOAP-ENV:Body>
     <ns1:get_users_list_response>
       <result_code>0</result_code>
       <users>
         <user>
           <properties>
             <property>
               <name>name</name>
           </property>
         </user>
       </users>
     </ns1:get_users_list_response>
   </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
Resource-related Methods

'insert_resource' Method

The 'insert_resource' method is used to add a new resource to OFSC. For the resource to be added the properties are defined, and the resource is assigned to one or more users in the system.

'insert_resource' Request

The 'insert_resource' request specifies the external ID of the resource to be created, the properties of the new resource, the users the new resource is assigned to and the work skills assigned to the new resource.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>id</td>
<td>Yes</td>
<td>string</td>
<td>External ID of the resource to be added.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This field has a maximum length of 32 characters.</td>
</tr>
<tr>
<td>properties</td>
<td>Yes</td>
<td>array</td>
<td>array of user 'property' nodes ('name' and 'value').</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Please check the specific properties for visibility.</td>
</tr>
<tr>
<td>users</td>
<td>No</td>
<td>array</td>
<td>array of 'login' elements each containing a user login identifying the user to be assigned to the resource</td>
</tr>
</tbody>
</table>
name | required | type | description
--- | --- | --- | ---
workskills | no | array | array of ‘workskill’ and ‘workskill_group’ elements each corresponding to one of work skills or work skill groups to be assigned to the resource

- 'properties' Array of ‘insert_resource’ Request

The following user properties are mandatory in the ‘insert_resource’ request:

<table>
<thead>
<tr>
<th>name</th>
<th>required</th>
<th>type</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>status</td>
<td>yes</td>
<td>string</td>
<td>resource status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values: ‘active’, ‘inactive’</td>
</tr>
<tr>
<td>parent_id</td>
<td>yes</td>
<td>string</td>
<td>external ID of the parent resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This field has a maximum length of 32 characters.</td>
</tr>
<tr>
<td>type</td>
<td>yes</td>
<td>enum</td>
<td>resource type; company specific resource type name</td>
</tr>
<tr>
<td>name</td>
<td>yes</td>
<td>string</td>
<td>name of the resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This field has a maximum length of 40 characters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If you send a longer value in the request,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>only the first 40 characters will be saved and the rest will be ignored.</td>
</tr>
<tr>
<td>language</td>
<td>yes</td>
<td>enum</td>
<td>customer-specific language label</td>
</tr>
<tr>
<td>time_zone</td>
<td>yes</td>
<td>string</td>
<td>resource time zone: customer-specific time zone name</td>
</tr>
</tbody>
</table>

**Note:** In addition to the request parameters listed here, all the custom properties except file properties can be sent in request in the same way as built-in fields. The maximum length for custom properties of type ‘string’ is 65535 characters. If you send a longer value in the request, only the first 65535 characters will be saved and the rest will be ignored.

- 'workskills' Array of ‘insert_resource’ Request

The 'workskills' array may contain the following elements:

<table>
<thead>
<tr>
<th>name</th>
<th>required</th>
<th>type</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>workskill</td>
<td>no</td>
<td>array</td>
<td>any of the work skills defined in OFSC which the resource has</td>
</tr>
<tr>
<td>workskill_group</td>
<td>no</td>
<td>string</td>
<td>any of the work skill groups defined in OFSC which the resource has</td>
</tr>
</tbody>
</table>
• 'workskill' Element of 'insert_resource' Request

The 'workskill' element consists of the following:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>label</td>
<td>Yes</td>
<td>string</td>
<td>label of a work skill defined in OFSC</td>
</tr>
<tr>
<td>ratio</td>
<td>Yes</td>
<td>string</td>
<td>level of qualification of the skill defined with the 'label' for the resource. valid values: 0 – 100</td>
</tr>
</tbody>
</table>

**Note:** If a work skill defined with a 'workskill' element is contained in a work skill group that is also assigned to a resource, the qualification level defined directly for the work skill will prevail over the one predefined with the work skill group.

• 'insert_resource' Request Example

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:insert_resource>
      <user>
        <now>2014-05-19T13:50:10Z</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>7160f16f31540cc07128404a8d878e69</auth_string>
      </user>
      <id>test_resource</id>
      <properties>
        <property>
          <name>parent_id</name>
          <value>22</value>
        </property>
        <property>
          <name>type</name>
          <value>provider</value>
        </property>
        <property>
          <name>name</name>
          <value>test_insert_resource</value>
        </property>
        <property>
          <name>language</name>
          <value>en</value>
        </property>
        <property>
          <name>time_zone</name>
          <value>Pacific</value>
        </property>
      </properties>
      <workskills>
        <workskill>
          <label>IN</label>
          <ratio>100</ratio>
        </workskill>
      </workskills>
    </ns1:insert_resource>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
'insert_resource' Response

The 'insert_resource' response contains data on the method success/failure.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
</tbody>
</table>

'update_resource' Method

The 'update_resource' method is used to modify the properties of the specified resource.

In addition to the predefined set of resource properties existing in OFSC, the Resource Management API can add or update company-specific resource properties. These actions are subject to the visibilities set in the corresponding display profile.

'update_resource' Request

The 'update_resource' request specifies the external ID of the resource to be updated, and, optionally, may specify the properties, users and work skills to be modified for the resource. Any properties not sent in the 'update_resource' request remain unchanged.

The 'update_resource' request contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>ID</td>
<td>Yes</td>
<td>string</td>
<td>external ID of the resource to be updated.</td>
</tr>
</tbody>
</table>

This field has a maximum length of 32 characters.
<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>properties</td>
<td>No</td>
<td>array</td>
<td>array of ‘property’ elements each containing a property to be assigned or modified for the resource</td>
</tr>
<tr>
<td>users</td>
<td>No</td>
<td>array</td>
<td>array of ‘login’ elements each containing a user login identifying the user assigned or to be assigned to the resource</td>
</tr>
<tr>
<td>workskills</td>
<td>No</td>
<td>array</td>
<td>array of ‘workskill’ and ‘workskill_group’ elements each corresponding to one of work skills or work skill groups assigned or to be assigned to the resource</td>
</tr>
</tbody>
</table>

The ‘update_resource’ request may optionally contain resource fields and company-defined properties, users and work skills to be updated as the result of the request. Please refer to the list of resource properties which may be updated by the ‘update_resource’ method.

- ‘update_resource’ Request Example

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
  <ns1:update_resource>
   <user>
    <now>2014-05-19T13:50:10Z</now>
    <login>root</login>
    <company>sunrise</company>
    <auth_string>7160f16f31540cc07128404a8d878e69</auth_string>
   </user>
   <id>test_resource</id>
   <properties>
    <property>
     <name>parent_id</name>
     <value>23</value>
    </property>
    <property>
     <name>name</name>
     <value>test_resource1</value>
    </property>
   </properties>
  </ns1:update_resource>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

**Note:** if a certain value does not have to be updated, it should be excluded from the request. To update the values, the node should be added to the request. New values will overwrite the previous ones. An empty node will erase the existing values.

To change the work skills, they have to be added to the request as in the following example:

```xml
<workskills>
 <workskill>
  <label>IN</label>
  <ratio>100</ratio>
 </workskill>
 <workskill>
  <label>UP</label>
  <ratio>50</ratio>
 </workskill>
 <workskill_group>TestGroup</workskill_group>
</workskills>
```
To erase all work-skills, an empty element should be added to the request as in the following example:

```xml
<soapenv:Body>
  <urn:update_resource>
    <id>j.smith</id>
    <workskills/>
  </urn:update_resource>
</soapenv:Body>
```

### 'update_resource' Response

The 'update_resource' response contains data on the method success/failure.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
</tbody>
</table>

**'update_resource' Response Example**

```xml
  xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:update_resource_response>
      <result_code>0</result_code>
    </ns1:update_resource_response>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

### 'get_resource' Method

The 'get_resource' method is used to retrieve information of the specified existing resource.

### 'get_resource' Request

The 'insert_user' method must define the login of the user and the properties and resources to be assigned to the user. It must also define the profiles to be assigned to the user created as the result of the request.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>id</td>
<td>Yes</td>
<td>string</td>
<td>external ID of the resource whose data is to be retrieved</td>
</tr>
<tr>
<td>date</td>
<td>No</td>
<td>string</td>
<td>date of the resource's calendar for which the working time may be returned in the response in the YYYY-MM-DD format</td>
</tr>
</tbody>
</table>
If the 'date' element is sent in the request, the response will contain the 'time_from', 'time_to' and 'non_working_reason' fields. Otherwise, these fields are not returned.

• 'get_resource' Request Example

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:get_resource>
      <user>
        <now>2014-05-15T15:22:10+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>7b4a4666c307ee86746f838567f8290</auth_string>
      </user>
      <id>test_resource</id>
    </ns1:get_resource>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

'get_resource' Response

The response to the 'get_resource' request contains data on the method success/failure and all properties of the processed resource. The response of the 'get_resource' method contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>properties</td>
<td>array</td>
<td>array of resource 'property' elements each containing one of the resource</td>
</tr>
<tr>
<td>users</td>
<td>array</td>
<td>array of 'login' elements that contain identifiers of the users assigned to the resource</td>
</tr>
<tr>
<td>workskills</td>
<td>array</td>
<td>array of 'workskill' and 'workskill_group' elements each corresponding to one of work skills or work skill groups assigned to the resource. It is only present in the response if an optional 'date' parameter is set in the request (resource work skills depend on the selected date because of teamwork) and if the work skill/work skill group list for resource is not empty.</td>
</tr>
</tbody>
</table>

• 'users' Array of 'get_resource' Response

The 'users' array consists of 'login' elements containing logins of the users assigned to the resource.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>login</td>
<td>string</td>
<td>login of the user assigned to the resource</td>
</tr>
</tbody>
</table>
• 'workskills' Array of 'get_resource' Request

The 'workskills' array may contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>workskill</td>
<td>array</td>
<td>any of the work skills defined in OFSC which the resource has</td>
</tr>
<tr>
<td>workskill_group</td>
<td>string</td>
<td>any of the work skill groups defined in OFSC which the resource has</td>
</tr>
</tbody>
</table>

• 'workskill' Element of 'get_resource' Response

The 'workskill' element consists of the following:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>label</td>
<td>string</td>
<td>label of a work skill defined in OFSC</td>
</tr>
<tr>
<td>ratio</td>
<td>string</td>
<td>level of qualification of the skill defined with the 'label' for the resource, valid values: 0 – 100</td>
</tr>
</tbody>
</table>

• 'get_resource' Response Example

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
   <ns1:get_resource_response>
     <result_code>0</result_code>
     <properties>
       <property>
         <name>id</name>
         <value>test_resource</value>
       </property>
       <property>
         <name>status</name>
         <value>active</value>
       </property>
       <property>
         <name>parent_id</name>
         <value>23</value>
       </property>
       <property>
         <name>type</name>
         <value>provider</value>
       </property>
       <property>
         <name>name</name>
         <value>test_resource1</value>
       </property>
       <property>
         <name>language</name>
         <value>en</value>
       </property>
   </properties>
 </ns1:get_resource_response>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
'get_resources_list' Method

The 'get_resources_list' method is used to retrieve the properties of all selected child resources of the defined resource.

'get_resources_list' Request

The 'insert_user' method must define the login of the user and the properties and resources to be assigned to the user. It must also define the profiles to be assigned to the user created as the result of the request.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>root_resource_id</td>
<td>No</td>
<td>string</td>
<td>external ID of the resource to return the subtree for&lt;br&gt;if empty or omitted, the data for the top resource of the resource tree will be returned</td>
</tr>
</tbody>
</table>
Detailed Methods Description

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>select_from</td>
<td>No</td>
<td>int</td>
<td>specifies the area of the list of resources found to return data from; resources in the list starting with 'select_from' are returned</td>
</tr>
<tr>
<td>select_count</td>
<td>No</td>
<td>int</td>
<td>total number of resources to be returned</td>
</tr>
<tr>
<td>include_children</td>
<td>No</td>
<td>string</td>
<td>parameter defining if only direct children of the resource are to be returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• immediate – only direct children are returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• all – all children are returned</td>
</tr>
<tr>
<td>date</td>
<td>No</td>
<td>string</td>
<td>date of the resource’s calendar for which the working time may be returned in the response in the YYYY-MM-DD format</td>
</tr>
<tr>
<td>required_properties</td>
<td>No</td>
<td>array</td>
<td>array of 'label' elements that contain 'names' of the resource properties to be returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>if empty or omitted, 'id', 'parent_id', 'name' and 'status' are returned</td>
</tr>
</tbody>
</table>

**'get_resources_list' Request Example**

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:get_resources_list>
      <user>
        <now>2014-05-16T08:05:10+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>64cab386ebd869312aa6b62d52e7278f</auth_string>
      </user>
      <root_resource_id>11100</root_resource_id>
      <select_from>0</select_from>
      <select_count>2</select_count>
      <required_properties>
        <label>name</label>
        <label>type</label>
        <label>status</label>
        <label>workskills</label>
      </required_properties>
    </ns1:get_resources_list>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

**'get_resources_list' Response**

The response to 'get_resources_list' contains data on the method success/failure, the count of resources found by the request and their properties. The response of 'get_resources_list' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>resources</td>
<td>array</td>
<td>array of 'resource' elements each consisting of a 'properties' array containing the properties of a single resource</td>
</tr>
<tr>
<td>resource_count</td>
<td>int</td>
<td>total number of child resources returned in the response</td>
</tr>
</tbody>
</table>

- 'resources' Array of 'get_resources_list' Response

The 'get_resources_list' resources array contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource</td>
<td>array</td>
<td>nodes, each containing the 'properties' array of the resource 'property' elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The properties specified in the 'required_properties' array of the 'get_resources_list' request are returned.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the 'required_properties' array is empty or omitted, 'id', 'parent_id', 'name' and 'status' properties are returned.</td>
</tr>
<tr>
<td>workskills</td>
<td>array</td>
<td>array of 'workskill' and 'workskill_group' elements each corresponding to one of work skills or work skill groups assigned to the resource. It is only present in the response if an optional 'date' parameter is set in the request (resource work skills depend on the selected date because of teamwork) and if the work skill/work skill group list for resource is not empty.</td>
</tr>
</tbody>
</table>

- 'workskills' Array of 'get_resources_list' Response

The 'workskills' array may contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>workskill</td>
<td>array</td>
<td>any of the work skills defined in OFSC which the resource has</td>
</tr>
<tr>
<td>workskill_group</td>
<td>string</td>
<td>any of the work skill groups defined in OFSC which the resource has</td>
</tr>
</tbody>
</table>

- 'workskill' Element of 'get_resource_list' Response

The 'workskill' element consists of the following:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>label</td>
<td>string</td>
<td>label of a work skill defined in OFSC</td>
</tr>
<tr>
<td>ratio</td>
<td>string</td>
<td>level of qualification of the skill defined with the 'label' for the resource.</td>
</tr>
</tbody>
</table>
valid values: 0 – 100

• 'get_resource_list' Response Example

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
  <ns1:get_resources_list_response>
   <result_code>0</result_code>
   <resources>
    <resource>
     <properties>
      <property>
       <name>name</name>
       <value>ALFORD, Johnny</value>
      </property>
      <property>
       <name>type</name>
       <value>provider</value>
      </property>
      <property>
       <name>status</name>
       <value>active</value>
      </property>
     </properties>
     <workskills>
      <workskill>
       <label>IN</label>
       <ratio>100</ratio>
      </workskill>
      <workskill>
       <label>UP</label>
       <ratio>50</ratio>
      </workskill>
     </workskills>
    </resource>
    <resource>
     <properties>
      <property>
       <name>name</name>
       <value>(afternoon) BARRAGAN, James</value>
      </property>
      <property>
       <name>type</name>
       <value>provider</value>
      </property>
      <property>
       <name>status</name>
       <value>active</value>
      </property>
     </properties>
     <workskills>
    </workskills>
    </resource>
   </resources>
   <resources_count>44</resources_count>
  </ns1:get_resources_list_response>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
'set_resources_calendars' Method

The 'set_resources_calendars' method is used to define the working time, shifts, schedules and non-working time of a specific resource for a specific date.

'set_resources_calendars' Request

The 'set_resources_calendars' requests specify the details of the calendar to be defined:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>calendars</td>
<td>Yes</td>
<td>array</td>
<td>array of 'calendar' elements, each being an array of 'properties' elements containing properties of a single calendar</td>
</tr>
</tbody>
</table>

- 'calendar' Array of 'set_resources_calendars' Request

The 'calendar' array of the 'set_resources_calendars' request is an array of 'properties' elements each consisting of calendar 'property' elements defining the properties of the calendar to be set for the specified resource. The following properties can be defined by the 'set_resources_calendars' request:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>userdata</td>
<td>No</td>
<td>string</td>
<td>reference to a calendar record to identify the record in the response</td>
</tr>
<tr>
<td>date</td>
<td>Yes</td>
<td>date</td>
<td>date for which the calendar is defined</td>
</tr>
<tr>
<td>resource_id</td>
<td>Yes</td>
<td>string</td>
<td>external ID of the resource for which the calendar is defined</td>
</tr>
<tr>
<td>duration</td>
<td>No</td>
<td>int</td>
<td>the number of consecutive days for which the calendar is to be applied (including the 'date') default value: 1</td>
</tr>
<tr>
<td>comment</td>
<td>No</td>
<td>string</td>
<td>free format comment to the calendar</td>
</tr>
<tr>
<td>schedule</td>
<td>No</td>
<td>string</td>
<td>external ID (label) of the schedule or shift to be assigned. Note: if for a company the same label is used for both a work schedule and a shift, the work schedule will be assigned.</td>
</tr>
<tr>
<td>calendar_type</td>
<td>Yes/No</td>
<td>enum</td>
<td>type of the calendar to be set</td>
</tr>
</tbody>
</table>

Mandatory if the 'schedule' value is not defined
valid values: ‘working’, ‘non-working’
<table>
<thead>
<tr>
<th>Field</th>
<th>Required</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time_from</td>
<td>Yes/No</td>
<td>time</td>
<td>start of the working time for the specified date and resource.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mandatory if the resource is assigned a working calendar.</td>
</tr>
<tr>
<td>time_to</td>
<td>Yes/No</td>
<td>time</td>
<td>end of the working time for the specified date and resource.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mandatory if the resource is assigned a working calendar.</td>
</tr>
<tr>
<td>points</td>
<td>No</td>
<td>int</td>
<td>number of points for the day</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This field is to be used when the ‘points’ functionality is enabled for the company</td>
</tr>
<tr>
<td>non_working_reason</td>
<td>Yes/No</td>
<td>enum</td>
<td>label of non-working reason – one of the reasons predefined for the company.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mandatory if the resource is assigned a non-working calendar.</td>
</tr>
</tbody>
</table>

• 'set_resources_calendars' Request Example

```xml
   xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:set_resources_calendars>
      <user>
        <now>2014-05-15T08:09:23+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>6f9ce1abe552563338fd98536024a40b</auth_string>
      </user>
      <calendars>
        <calendar>
          <properties>
            <property>
              <name>userdata</name>
              <value>0x0fd0</value>
            </property>
            <property>
              <name>date</name>
              <value>2011-03-30</value>
            </property>
            <property>
              <name>resource_id</name>
              <value>test_bucket</value>
            </property>
            <property>
              <name>schedule</name>
              <value>ODD-1st/PAR-2nd</value>
            </property>
            <property>
              <name>comment</name>
              <value>default test_bucket resources work schedule</value>
            </property>
          </properties>
        </calendar>
        <calendar>
          <properties>
            <property>
              <name>date</name>
              <value>2011-03-30</value>
            </property>
          </properties>
        </calendar>
      </calendars>
    </ns1:set_resources_calendars>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
<value>test_resource2</value>
</property>
<property>
<name>schedule</name>
:value>On-call+2nd</value>
</property>
</properties>
</calendar>
<calendar>
<properties>
<property>
<name>userdata</name>
<value>D/O</value>
</property>
<property>
<name>date</name>
<value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
<value>test_resource1</value>
</property>
<property>
<name>calendar_type</name>
<value>non-working</value>
</property>
<property>
<name>non_working_reason</name>
<value>day-off</value>
</property>
</properties>
</calendar>
<calendar>
<properties>
<property>
<name>date</name>
<value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
<value>test_subbuscet</value>
</property>
<property>
<name>schedule</name>
<value>PAR-2nd/ODD-1st</value>
</property>
</properties>
</calendar>
<calendar>
<properties>
<property>
<name>date</name>
<value>2011-03-20</value>
</property>
<property>
<name>resource_id</name>
<value>test_tech</value>
</property>
<property>
<name>schedule</name>
<value>PAR2nd/ODD-1st</value>
</property>
<property>
<name>duration</name>
<value>10</value>
</property>
'set_resources_calendars' Response

The 'set_resources_calendars' response contains data on the method success/failure as well as on the success/failure of each calendar to be defined according to the request. The response of 'set_resources_calendars' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
</tbody>
</table>

- 'calendar_result' Element of 'set_resources_calendars' Response

Each 'calendar_result' element contains the details of success/failure for each of the calendars defined in the request and can contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>userdata</td>
<td>string</td>
<td>reference to a calendar record as defined in the request</td>
</tr>
<tr>
<td>calendar_result_code</td>
<td>int</td>
<td>transaction result code for the specific calendar defined in the request</td>
</tr>
<tr>
<td>calendar_error_msg</td>
<td>string</td>
<td>transaction error description (if 'calendar_result_code' is other than '0')</td>
</tr>
</tbody>
</table>

- 'set_resources_calendars' Response Example

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:set_resources_calendars_response>
      <result_code>0</result_code>
      <calendars_results>
        <calendar_result>
          <userdata>0xdf0</userdata>
          <calendar_result_code>0</calendar_result_code>
        </calendar_result>
        <calendar_result>
          <calendar_result_code>0</calendar_result_code>
        </calendar_result>
        <calendar_result>
          <userdata>D/O</userdata>
          <calendar_result_code>0</calendar_result_code>
        </calendar_result>
        <calendar_result>
          <calendar_result_code>0</calendar_result_code>
        </calendar_result>
      </calendars_results>
    </ns1:set_resources_calendars_response>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
'get_resources_calendars' Method

The 'get_resources_calendars' method is used to retrieve the details of calendars assigned to different resources for specific dates.

'get_resources_calendars' Request

The 'get_resources_calendars' requests specify the dates and resources for which the calendars are to be retrieved. The request can contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>resources</td>
<td>array</td>
<td>Yes</td>
<td>array of 'resource' elements, each defining the details of calendars to be retrieved</td>
</tr>
</tbody>
</table>

- 'resource' Element of 'get_resources_calendars' Request

In the 'get_resources_calendars' request 'resources' is an array of the 'resource' elements each containing the following parameters of data to be returned:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource for which the calendar is retrieved</td>
</tr>
<tr>
<td>date</td>
<td>date</td>
<td>Yes</td>
<td>date for which the calendar is to be retrieved</td>
</tr>
<tr>
<td>include_children</td>
<td>enum</td>
<td>No</td>
<td>parameter defining if subordinate resources are to be considered valid values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• no – only the specified resource's calendars will be returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• immediate – return the calendars of the specified resource and the ones directly below it (first level of descendants)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• all – return the calendars of the specified resource and all of those below it in the tree hierarchy</td>
</tr>
<tr>
<td>duration</td>
<td>int</td>
<td>No</td>
<td>parameter defining for how many consecutive days the calendar is to be returned (including the 'date') default value: 1</td>
</tr>
</tbody>
</table>

<calendar_result_code>68009</calendar_result_code>  
<calendar_error_msg>'schedule' is not registered in the system</calendar_error_msg>  
</calendar_result>  
</calendars_results>  
</ns1:set_resources_calendars_response>  
</SOAP-ENV:Body>  
</SOAP-ENV:Envelope>
include_inactive  bool  No  parameter defining if calendars of inactive resources are to be returned

valid values:
- true – calendars of inactive resources are to be returned
- false – calendars of inactive resources are not to be returned

default value: false

'get_resources_calendars' Request Example

```xml
<?xml version="1.0" encoding="UTF-8"?>
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:get_resources_calendars>
      <user>
        <now>2014-05-15T08:23+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>6f9c1e5abe552563338fd98536024a0b</auth_string>
      </user>
      <resources>
        <resource>
          <resource_id>test_bucket</resource_id>
          <include_children>all</include_children>
          <date>2011-03-30</date>
        </resource>
        <resource>
          <resource_id>test_tech</resource_id>
          <date>2011-03-20</date>
          <duration>2</duration>
        </resource>
      </resources>
    </ns1:get_resources_calendars>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

'get_resources_calendars' Response

The 'get_resources_calendars' response contains data on the method success/failure and the details of the requested calendars. The response of 'get_resources_calendars' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>calendars</td>
<td>array</td>
<td>array of 'calendar' elements, each being an array of 'properties' elements containing properties of a single calendar</td>
</tr>
</tbody>
</table>

'calendar' Element of 'get_resources_calendars' response

The 'calendar' element of the 'get_resources_calendars' response is an array of 'properties' elements each consisting of calendar 'property' elements defining the properties of the specified resource’s calendar. The following properties can be returned by the 'get_resources_calendars' request:
## Name | Type | Description
--- | --- | ---
date | date | date for which the calendar is set
resource_id | string | external ID of the resource for which the calendar is set
comment | string | free format comment for the calendar
schedule | string | external ID (label) of the schedule or shift, if any
calendar_type | enum | calendar type
  possible values: working, non-working, on-call, not on-call
time_from | time | start of the working time for the specified date and resource (only if the resource is assigned a working calendar)
time_to | time | end of the working time for the specified date and resource (only if resource is assigned a working calendar)
points | int | number of point for the day (only if 'points' functionality is enabled for the company)
non_working_reason | enum | label of non-working reason – one of the reasons predefined for the company (only if the resource is assigned a non-working calendar)

- 'get_resources_calendars' response Example

```xml
  <SOAP-ENV:Body>
    <ns1:get_resources_calendars>
      <result_code>0</result_code>
      <calendars>
        <calendar>
          <properties>
            <property>
              <name>date</name>
              <value>2011-03-30</value>
            </property>
            <property>
              <name>resource_id</name>
              <value>test_bucket</value>
            </property>
            <property>
              <name>schedule</name>
              <value>ODD-1st/PAR-2nd</value>
            </property>
            <property>
              <name>calendar_type</name>
              <value>working</value>
            </property>
            <property>
              <name>time_from</name>
              <value>14:00</value>
            </property>
          </properties>
        </calendar>
      </calendars>
    </ns1:get_resources_calendars>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
<calendar>
<properties>
<property>
<name>date</name>
<value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
<value>test_resource</value>
</property>
<property>
<name>schedule</name>
<value>ODD-1st/PAR-2nd</value>
</property>
<property>
<name>calendar_type</name>
<value>working</value>
</property>
<property>
<name>time_from</name>
<value>14:00</value>
</property>
<property>
<name>time_to</name>
<value>20:00</value>
</property>
</properties>
</calendar>

<calendar>
<properties>
<property>
<name>date</name>
<value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
<value>test_resource2</value>
</property>
<property>
<name>schedule</name>
<value>On-call+2nd</value>
</property>
<property>
<name>calendar_type</name>
<value>working</value>
</property>
<property>
<name>time_from</name>
<value>14:00</value>
</property>
<property>
<name>time_to</name>
<value>20:00</value>
</property>
</properties>
</calendar>
<calendar>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_resource2</value>
    </property>
    <property>
      <name>schedule</name>
      <value>On-call+2nd</value>
    </property>
    <property>
      <name>calendar_type</name>
      <value>on-call</value>
    </property>
    <property>
      <name>time_from</name>
      <value>08:00</value>
    </property>
    <property>
      <name>time_to</name>
      <value>14:00</value>
    </property>
  </properties>
</calendar>

<calendar>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_resource1</value>
    </property>
    <property>
      <name>calendar_type</name>
      <value>non-working</value>
    </property>
    <property>
      <name>non_working_reason</name>
      <value>day-off</value>
    </property>
  </properties>
</calendar>

<calendar>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_subbuscet</value>
    </property>
    <property>
      <name>calendar_type</name>
      <value>working</value>
    </property>
    <property>
      <name>schedule</name>
      <value>PAR-2nd/ODD-1st</value>
    </property>
    <property>
      <name>calendar_type</name>
      <value>working</value>
    </property>
  </properties>
</calendar>
<property>
  <name>time_from</name>
  <value>08:00</value>
</property>

<property>
  <name>time_to</name>
  <value>17:00</value>
</property>

<calendar>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_recourse4</value>
    </property>
    <property>
      <name>schedule</name>
      <value>PAR-2nd/ODD-1st</value>
    </property>
    <property>
      <name>calendar_type</name>
      <value>working</value>
    </property>
    <property>
      <name>time_from</name>
      <value>08:00</value>
    </property>
    <property>
      <name>time_to</name>
      <value>17:00</value>
    </property>
  </properties>
</calendar>

<calendar>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-20</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_tech</value>
    </property>
    <property>
      <name>schedule</name>
      <value>PAR-2nd/ODD-1st</value>
    </property>
    <property>
      <name>calendar_type</name>
      <value>working</value>
    </property>
    <property>
      <name>time_from</name>
      <value>08:00</value>
    </property>
    <property>
      <name>time_to</name>
      <value>17:00</value>
    </property>
  </properties>
</calendar>
'set_resources_zones' Method

The 'set_resources_zones' method is used to define the work zones for the specified resource.

'set_resources_zones' Request

The 'set_resources_zones' requests specify the details of the work zone to be defined:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>zones</td>
<td>array</td>
<td>Yes</td>
<td>array of 'zone' elements, each being an array of 'properties' elements containing properties of a single work zone</td>
</tr>
</tbody>
</table>

• 'zone' Element of 'set_resources_zones' Request

The 'zone' array of the 'set_resources_zones' request is an array of 'properties' elements each consisting of 'property' elements defining the properties of the work zone to be set for the specified resource. The following properties can be defined by the 'set_resources_zones' request:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>Type</td>
<td>Required</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>userdata</td>
<td>string</td>
<td>No</td>
<td>reference to a zone record to identify the record in the response</td>
</tr>
<tr>
<td>date</td>
<td>date</td>
<td>Yes</td>
<td>date for which the zone is defined</td>
</tr>
</tbody>
</table>
| duration   | int     | No       | the number of consecutive days for which the work zone is to be applied (including the 'date')
|            |         |          | default value: 1                                                            |
| resource_id| string  | Yes      | external ID of the resource for which the zone is defined                   |
| zone       | enum    | No       | label of the work zone, one of the zones predefined for the company        |
|            |         |          | If empty or omitted, the entire list of work zones of the resource identified by 'resource_id' is removed. |
| ratio      | enum    | No       | priority of activities assignment to the resource in the work zone         |
|            |         |          | valid values:                                                              |
|            |         |          | from 0 to 100: '0' – do not assign, '1' – lowest priority; '100' – highest priority |
|            |         |          | If empty or omitted, the work zone is removed.                              |

**Note**: for a specific date and resource all operations that require removal of a work zone are performed before any operation that requires assignment of a work zone.

- 'set_resources_zones' Request Example

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:set_resources_zones>
      <user>
        <now>2012-05-15T16:11:43Z</now>
        <login>soap</login>
        <company>sunrise</company>
        <auth_string>0274a81f9f15700c11bee5489a09a24</auth_string>
      </user>
      <zones>
        <zone>
          <properties>
            <property>
              <name>resource_id</name>
              <value>resource1-del-specific</value>
            </property>
            <property>
              <name>zone</name>
              <value>ALTAMONTE SPRINGS</value>
            </property>
            <property>
              <name>ratio</name>
              <value>100</value>
            </property>
            <property>
              <name>date</name>
              <value>2012-05-15</value>
            </property>
          </properties>
        </zone>
      </zones>
    </ns1:set_resources_zones>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
<property>
  <name>resource_id</name>
  <value>resource1-del-specific-add</value>
</property>
<property>
  <name>zone</name>
  <value>CASSELBERRY</value>
</property>
<property>
  <name>ratio</name>
  <value>100</value>
</property>
<property>
  <name>date</name>
  <value>2012-05-15</value>
</property>
</zone>
<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-add</value>
    </property>
    <property>
      <name>zone</name>
      <value>CHULUOTA</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>
<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all</value>
    </property>
    <property>
      <name>zone</name>
      <value>ALTAMONTE SPRINGS</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>
<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all</value>
    </property>
    <property>
      <name>zone</name>
      <value>CASSELBERRY</value>
    </property>
  </properties>
</zone>
</property>
<property>
<name>resource_id</name>
:value>resource1-del-all</value>
</property>
<property>
<name>zone</name>
:value>CHULUOTA</value>
</property>
<property>
<name>ratio</name>
:value>100</value>
</property>
<property>
<name>date</name>
:value>2012-05-15</value>
</property>
</zone>
<zone>
<properties>
<property>
<name>resource_id</name>
:value>resource1-del-all-add</value>
</property>
<property>
<name>zone</name>
:value>ALTAMONTE SPRINGS</value>
</property>
<property>
<name>ratio</name>
:value>100</value>
</property>
<property>
<name>date</name>
:value>2012-05-15</value>
</property>
</zone>
<zone>
<properties>
<property>
<name>resource_id</name>
:value>resource1-del-all-add</value>
</property>
<property>
<name>zone</name>
:value>CASSELBERRY</value>
</property>
<property>
<name>ratio</name>
:value>100</value>
</property>
</zone>
<properties>
  <property>
    <name>resource_id</name>
    <value>resource1-del-specific-twice</value>
  </property>
  <property>
    <name>zone</name>
    <value>CHULUOTA</value>
  </property>
  <property>
    <name>ratio</name>
    <value>100</value>
  </property>
  <property>
    <name>date</name>
    <value>2012-05-15</value>
  </property>
</zone>

<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all-twice</value>
    </property>
    <property>
      <name>zone</name>
      <value>ALTAMONTE SPRINGS</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>

<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all-twice</value>
    </property>
    <property>
      <name>zone</name>
      <value>CASSELBERRY</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>

<property>
  <name>resource_id</name>
  <value>resource1-del-all-twice</value>
</property>

<property>
  <name>zone</name>
  <value>CASSELBERRY</value>
</property>

<property>
  <name>ratio</name>
  <value>100</value>
</property>

<property>
  <name>date</name>
  <value>2012-05-15</value>
</property>
<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all-twice-add</value>
    </property>
    <property>
      <name>zone</name>
      <value>ALTAMONTE SPRINGS</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>

<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all-twice-add</value>
    </property>
    <property>
      <name>zone</name>
      <value>CASSELBERRY</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>

<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all-twice-add</value>
    </property>
    <property>
      <name>zone</name>
      <value>CHULUOTA</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
    <property>
      <name>date</name>
      <value>2012-05-15</value>
    </property>
  </properties>
</zone>
Oracle Field Service Cloud
Integrating with Resource Management API

Chapter 4
Detailed Methods Description

```xml
<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-add-same</value>
    </property>
    <property>
      <name>zone</name>
      <value>ALTAMONTE SPRINGS</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>

<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-add-same</value>
    </property>
    <property>
      <name>zone</name>
      <value>CASSELBERRY</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>

<zone>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-add-same</value>
    </property>
    <property>
      <name>zone</name>
      <value>CHULUOTA</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>
```
The 'set_resources_zones' response contains data on the method success/failure as well as on the success/failure of each work zone to be defined according to the request. The response of 'set_resources_zones' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>zones_results</td>
<td>array</td>
<td>array of 'zone_result' elements containing the data on the success/failure of each work zone assignment</td>
</tr>
</tbody>
</table>

- 'zone_result' Element of 'set_resources_zones' response

Each 'zone_result' element contains the details of success/failure for each of the work zones defined in the request and can contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>userdata</td>
<td>string</td>
<td>reference to a zone record as defined in the request</td>
</tr>
<tr>
<td>zone_result_code</td>
<td>int</td>
<td>transaction result code for the specific work zone defined in the request</td>
</tr>
<tr>
<td>zone_error_msg</td>
<td>string</td>
<td>transaction error description (if 'zone_result_code' is other than '0')</td>
</tr>
</tbody>
</table>

- 'set_resources_zones' response Example

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:set_resources_zones_response>
      <result_code>0</result_code>
      <zones_results>
        <zone_result>
          <userdata>0xdf0</userdata>
          <zone_result_code>0</zone_result_code>
        </zone_result>
        <zone_result>
          <zone_result_code>0</zone_result_code>
        </zone_result>
        <zone_result>
          <userdata>D/O</userdata>
          <zone_result_code>0</zone_result_code>
        </zone_result>
        <zone_result>
          <zone_result_code>0</zone_result_code>
        </zone_result>
      </zones_results>
    </ns1:set_resources_zones_response>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
'get_resources_zones' Method

The 'get_resources_zones' method is used to retrieve the details of work zones assigned to different resources for specific dates.

'get_resources_zones' Request

The 'get_resources_zones' method is used to retrieve the details of work zones assigned to different resources for specific dates.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>resources</td>
<td>array</td>
<td>Yes</td>
<td>array of 'resource' elements, each defining the details of zones to be retrieved</td>
</tr>
</tbody>
</table>

- 'resource' Element of 'get_resources_zones' Request

In the 'get_resources_zones' request 'resources' is an array of the 'resource' elements each containing the following parameters of data to be returned:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource for which the work zones are to be retrieved</td>
</tr>
<tr>
<td>date</td>
<td>date</td>
<td>Yes</td>
<td>date for which the zones are retrieved</td>
</tr>
<tr>
<td>include_children</td>
<td>enum</td>
<td>No</td>
<td>defines if subordinate resources are to be considered</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• no – only the specified resource’s work zones will be returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• immediate – return work zones of the specified resource and the ones directly below it (first level of descendants)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• all – return work zones of the specified resource and all of those below it in the tree hierarchy</td>
</tr>
<tr>
<td>duration</td>
<td>int</td>
<td>No</td>
<td>parameter defining for how many consecutive days the work zone is to be retrieved for (including the 'date')</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>default value: 1</td>
</tr>
</tbody>
</table>
include_inactive  bool  No  parameter defining if work zones of inactive resources are to be returned

valid values:

- true – work zones of inactive resources are to be returned
- false – work zones of inactive resources are not to be returned

default value: false

• ‘get_resources_zones’ Request Example

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
  <ns1:get_resources_zones>
   <user>
    <now>2014-05-15T08:23+00:00</now>
    <company>sunrise</company>
    <login>root</login>
    <auth_string>6f9celabe552563338fad99536024a40b</auth_string>
   </user>
   <resources>
    <resource>
     <resource_id>test_bucket</resource_id>
     <include_children>all</include_children>
     <date>2011-03-30</date>
    </resource>
    <resource>
     <resource_id>test_tech</resource_id>
     <date>2011-03-20</date>
     <duration>2</duration>
    </resource>
   </resources>
  </ns1:get_resources_zones>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

• ‘get_resources_zones’ Response

The ‘get_resources_zones’ response contains data on the method success/failure and the list of found work zones with their properties. The response of ‘get_resources_zones’ contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if ‘result_code’ is other than ‘0’)</td>
</tr>
<tr>
<td>zones</td>
<td>array</td>
<td>array of ‘zone’ elements, each being an array of ‘properties’ elements containing properties of a single work zone</td>
</tr>
</tbody>
</table>

• ‘zone’ Element of ‘get_resources_zones’ response
The 'zone' element of the 'get_resources_zones' response is an array of 'properties' elements each consisting of work zone 'property' elements defining the properties of the specified resource's work zone. The following properties can be returned by the 'get_resources_zones' request:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>date</td>
<td>date</td>
<td>date for which the work zone is defined</td>
</tr>
<tr>
<td>resource_id</td>
<td>string</td>
<td>external ID of the resource to which the work zone is assigned</td>
</tr>
<tr>
<td>zone</td>
<td>string</td>
<td>label of the work zone</td>
</tr>
<tr>
<td>ratio</td>
<td>string</td>
<td>ratio of the work zone (priority of assignment from 0 to 100)</td>
</tr>
</tbody>
</table>

'get_resources_zones' response Example

```xml
  <SOAP-ENV:Body>
    <ns1:get_resources_zones>
      <result_code>0</result_code>
      <zones>
        <zone>
          <properties>
            <property>
              <name>date</name>
              <value>2011-03-30</value>
            </property>
            <property>
              <name>resource_id</name>
              <value>test_bucket</value>
            </property>
            <property>
              <name>zone</name>
              <value>ORLANDO</value>
            </property>
            <property>
              <name>ratio</name>
              <value>50</value>
            </property>
          </properties>
        </zone>
        <zone>
          <properties>
            <property>
              <name>date</name>
              <value>2011-03-30</value>
            </property>
            <property>
              <name>resource_id</name>
              <value>test_resource</value>
            </property>
            <property>
              <name>zone</name>
              <value>DAYTONA</value>
            </property>
            <property>
              <name>ratio</name>
              <value>100</value>
            </property>
          </properties>
        </zone>
      </zones>
    </ns1:get_resources_zones>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
</property>
</properties>
</zone>
<zone>
<properties>
<property>
<name>date</name>
[value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
[value>test_resource2</value>
</property>
<property>
<name>zone</name>
[value>MELBOURN</value>
</property>
<property>
<name>ratio</name>
[value>75</value>
</property>
</properties>
</zone>
<zone>
<properties>
<property>
<name>date</name>
[value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
[value>test_resource2</value>
</property>
<property>
<name>zone</name>
[value>MELBOURN</value>
</property>
<property>
<name>ratio</name>
[value>10</value>
</property>
</properties>
</zone>
<zone>
<properties>
<property>
<name>date</name>
[value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
[value>test_resource1</value>
</property>
<property>
<name>zone</name>
[value>ORLANDO</value>
</property>
<property>
<name>ratio</name>
[value>75</value>
</property>
</properties>
</zone>
<zone>
<properties>
<property>
<name>date</name>
[value>2011-03-30</value>
</property>
<property>
<name>resource_id</name>
[value>test_resource1</value>
</property>
<property>
<name>zone</name>
[value>ORLANDO</value>
</property>
<property>
<name>ratio</name>
[value>75</value>
</property>
</properties>
</zone>
<property>
  <name>date</name>
  <value>2011-03-30</value>
</property>
<property>
  <name>resource_id</name>
  <value>test_subbuscet</value>
</property>
<property>
  <name>zone</name>
  <value>MLBOURN</value>
</property>
<property>
  <name>ratio</name>
  <value>100</value>
</property>
</properties>
</zone>
<zone>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_recource4</value>
    </property>
    <property>
      <name>zone</name>
      <value>ORLANDO</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>
<zone>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_subbuscet</value>
    </property>
    <property>
      <name>zone</name>
      <value>MLBOURN</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>
<zone>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_subbuscet</value>
    </property>
    <property>
      <name>zone</name>
      <value>MLBOURN</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>
<zone>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-30</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_subbuscet</value>
    </property>
    <property>
      <name>zone</name>
      <value>MLBOURN</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</zone>
<zone>
  <properties>
    <property>
      <name>date</name>
      <value>2011-03-20</value>
    </property>
    <property>
      <name>resource_id</name>
      <value>test_tech</value>
    </property>
  </properties>
</zone>
'set_resources_skills' Method

The 'set_resources_skills' method is used to define the working skills for the specific resource.
The 'set_resources_skills' request specifies the details of the work skill to be defined:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>struct</td>
<td>Yes</td>
<td>'user' structure</td>
</tr>
<tr>
<td>skills</td>
<td>array</td>
<td>Yes</td>
<td>array of 'skill' elements, each being an array of 'properties' elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>containing properties of a single work skill</td>
</tr>
</tbody>
</table>

- skill 'zone' Element of 'set_resources_skills' request

The 'skill' element of the 'set_resources_skills' request is an array of 'properties' elements each consisting of work skill 'property' elements defining the properties of the work skill to be set for the specified resource. The following properties can be defined by the 'set_resources_skills' request:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>userdata</td>
<td>string</td>
<td>No</td>
<td>reference to a work skill record to identify the record in the request</td>
</tr>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource for which the skill is defined</td>
</tr>
<tr>
<td>skill</td>
<td>enum</td>
<td>No</td>
<td>label of a work skill or work skill group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If empty or omitted, the entire list of work skills of the resource identified by 'resource_id' is removed.</td>
</tr>
<tr>
<td>ratio</td>
<td>enum</td>
<td>No</td>
<td>qualification level for the work skill</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>from 0 to 100 where '0' means that the resource does not have the skill, even if it is defined in a work skill group the resource has</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>'1' – lowest priority; '100' – highest priority</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If empty or omitted, the work skill is removed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: for work skill groups the 'ratio' value is ignored.</td>
</tr>
</tbody>
</table>

Note: in the course of activity assignment the resource with no work skills defined is treated as if it has all work skills with 100 ratio.

Note: for a specific resource all operations that require removal of a work skill are performed before any operations that require assignment of a work skill.

'set_resources_skills' request Example
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:set_resources_skills>
      <user>
        <now>2012-05-15T16:11:22Z</now>
        <login>soap</login>
        <company>sunrise</company>
        <auth_string>6e0767f78ec76ea6cfc3f9dab6d42922</auth_string>
      </user>
      <skills>
        <skill>
          <properties>
            <property>
              <name>resource_id</name>
              <value>resource1-del-specific</value>
            </property>
            <property>
              <name>skill</name>
              <value>IN</value>
            </property>
            <property>
              <name>ratio</name>
              <value>100</value>
            </property>
          </properties>
        </skill>
        <skill>
          <properties>
            <property>
              <name>resource_id</name>
              <value>resource1-del-specific</value>
            </property>
            <property>
              <name>skill</name>
              <value>GR</value>
            </property>
            <property>
              <name>ratio</name>
              <value>100</value>
            </property>
          </properties>
        </skill>
        <skill>
          <properties>
            <property>
              <name>resource_id</name>
              <value>resource1-del-specific</value>
            </property>
            <property>
              <name>skill</name>
              <value>UP</value>
            </property>
            <property>
              <name>ratio</name>
              <value>100</value>
            </property>
          </properties>
        </skill>
      </skills>
    </ns1:set_resources_skills>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
<property>
  <name>skill</name>
  <value>IN</value>
</property>

<property>
  <name>ratio</name>
  <value>100</value>
</property>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-add</value>
    </property>
    <property>
      <name>skill</name>
      <value>GR</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-add</value>
    </property>
    <property>
      <name>skill</name>
      <value>UP</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all</value>
    </property>
    <property>
      <name>skill</name>
      <value>IN</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all</value>
    </property>
    <property>
      <name>skill</name>
      <value>IN</value>
    </property>
  </properties>
</skill>
<property>
  <name>ratio</name>
  <value>100</value>
</property>
</properties>
</skill>
<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-twice</value>
    </property>
    <property>
      <name>skill</name>
      <value>IN</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>
<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-twice</value>
    </property>
    <property>
      <name>skill</name>
      <value>GR</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>
<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-specific-twice</value>
    </property>
    <property>
      <name>skill</name>
      <value>UP</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>
<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>resource1-del-all-twice</value>
    </property>
    <property>
      <name>skill</name>
      <value>IN</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>
<property>
<name>resource_id</name>
<value>resource1-del-all-twice</value>
</property>
</skill>
<skill>
<properties>
<property>
<name>resource_id</name>
<value>resource1-del-all-twice</value>
</property>
<property>
<name>skill</name>
<value>GR</value>
</property>
<property>
<name>ratio</name>
<value>100</value>
</property>
</properties>
</skill>
<skill>
<properties>
<property>
<name>resource_id</name>
<value>resource1-del-all-twice</value>
</property>
<property>
<name>skill</name>
<value>UP</value>
</property>
<property>
<name>ratio</name>
<value>100</value>
</property>
</properties>
</skill>
<skill>
<properties>
<property>
<name>resource_id</name>
<value>resource1-del-all-twice-add</value>
</property>
<property>
<name>skill</name>
<value>IN</value>
</property>
<property>
<name>ratio</name>
<value>100</value>
</property>
</properties>
</skill>
<skill>
<properties>
<property>
<name>resource_id</name>
<value>resource1-del-all-twice-add</value>
</property>
<property>
<name>skill</name>
<value>GR</value>
</property>
<property>
<name>ratio</name>
<value>100</value>
</property>
</properties>
</skill>
</properties>
</skill>

<skill>
<properties>
<property>
<name>resource_id</name>
[value>resource1-del-all-twice-add</value>
</property>
<property>
<name>skill</name>
[value>UP</value>
</property>
<property>
<name>ratio</name>
[value>100</value>
</property>
</skills>
The 'set_resources_skills' response contains data on the method success/failure as well as on the success/failure of each work skill to be assigned according to the request. The response of 'set_resources_skills' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>skill_results</td>
<td>array</td>
<td>array of 'skill_result' elements containing the data on the success/failure of each work skill assignment</td>
</tr>
</tbody>
</table>

- 'skill_result' Element of 'set_resources_skills' response

Each 'skill_result' element contains the details of success/failure for each of the work skills defined in the request and can contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>userdata</td>
<td>string</td>
<td>reference to a work skill record as defined in the request</td>
</tr>
<tr>
<td>skill_result_code</td>
<td>int</td>
<td>transaction result code for the specific work skill defined in the request</td>
</tr>
<tr>
<td>skill_error_msg</td>
<td>string</td>
<td>transaction error description (if 'skill_result_code' is other than '0')</td>
</tr>
</tbody>
</table>

- 'set_resources_skills' response Example

```xml
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
  <ns1:set_resources_skills_response>
   <result_code>0</result_code>
   <skill_results>
    <skill_result>
     <userdata>0xdf0</userdata>
     <skill_result_code>0</skill_result_code>
    </skill_result>
    <skill_result>
     <skill_result_code>0</skill_result_code>
    </skill_result>
    <skill_result>
     <userdata>D/O</userdata>
     <skill_result_code>0</skill_result_code>
    </skill_result>
    <skill_result>
     <skill_result_code>0</skill_result_code>
    </skill_result>
   </skill_results>
  </ns1:set_resources_skills_response>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
<skill_result>
<skill_result_code>68009</skill_result_code>
<skill_error_msg>'skill' is not registered in the system</skill_error_msg>
</skill_result>
</skill_results>
</ns1:set_resources_skills_response>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>

'get_resources_skills' Method

The 'get_resources_skills' method is used to retrieve the details of work skills assigned to different resources.

'get_resources_skills' Request

The 'get_resources_skills' requests specify the resources for which the work skill details are to be retrieved. The request can contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>struct</td>
<td>Yes</td>
<td>'user' structure</td>
</tr>
<tr>
<td>expand_complex_skills</td>
<td>string</td>
<td>No</td>
<td>parameter defining if work skill groups are to be expanded</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• no – return work skill groups as a single entity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• yes – return the final result of merging complex and elementary skills</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>default value: no</td>
</tr>
<tr>
<td>resources</td>
<td>array</td>
<td>Yes</td>
<td>array of 'resource' elements, each defining the details of work skills to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>retrieved</td>
</tr>
</tbody>
</table>

- 'resource' Element of 'get_resources_skills' request

In the 'get_resources_skills' request 'resources' is an array of the 'resource' elements each containing the following parameters of data to be returned:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource for which the work skills are to be retrieved</td>
</tr>
<tr>
<td>date</td>
<td>date</td>
<td>No</td>
<td>date for which the resource’s work skills are to be retrieved</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If the date is specified, the skills shared in the teams will also be returned.</td>
</tr>
<tr>
<td>include_children</td>
<td>enum</td>
<td>No</td>
<td>parameter defining if subordinate resources are to be considered</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valid values:</td>
</tr>
</tbody>
</table>
Chapter 4

Detailed Methods Description

- no – only the specified resource’s work skills will be returned
- immediate – the work skills of the specified resource and the ones directly below it (first level of descendants) will be returned
- all – the work skills of the specified resource and all of those below it in the tree hierarchy will be returned

| duration | int | No | parameter defining for how many days in a row the work skills are to be retrieved (including the 'date') default value: 1 |

'get_resources_skills' request Example

```xml
    xmlns:ns1="urn:toatech:ResourceManagement:1.0">
    <SOAP-ENV:Body>
        <ns1:get_resources_skills>
            <user>
                <login>root</login>
                <company>sunrise</company>
                <auth_string>6f9ce1abe552563338fd98536024a40b</auth_string>
            </user>
            <resources>
                <resource>
                    <resource_id>test_bucket</resource_id>
                    <include_children>all</include_children>
                </resource>
                <resource>
                    <resource_id>test_tech</resource_id>
                </resource>
            </resources>
        </ns1:get_resources_skills>
    </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

'get_resources_skills' Response

The 'get_resources_skills' response contains data on the method success/failure and the details of the requested work skills. The response of 'get_resources_skills' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>skills</td>
<td>array</td>
<td>array of 'skill' elements, each being an array of 'properties' elements containing properties of a single work skill</td>
</tr>
</tbody>
</table>

'skill' Element of 'get_resources_skills' response

The 'skill' element of the 'get_resources_skills' response is an array of 'properties' elements each consisting of work skill 'property' elements defining the properties of the specified resource's work skill. The following properties can be returned by the 'get_resources_skills' request
### Table: Work Skill Details

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>date</td>
<td>date</td>
<td>Date for which the work skill is returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indicates that the skills set includes the skills shared between team members for the specified day. If omitted, the skills set includes only the resource’s own skills.</td>
</tr>
<tr>
<td>resource_id</td>
<td>string</td>
<td>External ID of the resource to which the work skill is assigned</td>
</tr>
<tr>
<td>skill</td>
<td>string</td>
<td>Label of the work skill</td>
</tr>
<tr>
<td>ratio</td>
<td>string</td>
<td>Qualification level from 0 to 100</td>
</tr>
</tbody>
</table>

**‘get_resources_skills’ response Example**

```xml
xmlns:ns1="urn:toatech:ResourceManagement:1.0">
  <SOAP-ENV:Body>
    <ns1:get_resources_skills>
      <result_code>0</result_code>
      <skills>
        <skill>
          <properties>
            <property>
              <name>resource_id</name>
              <value>test_bucket</value>
            </property>
            <property>
              <name>skill</name>
              <value>Install</value>
            </property>
            <property>
              <name>ratio</name>
              <value>50</value>
            </property>
          </properties>
        </skill>
        <skill>
          <properties>
            <property>
              <name>resource_id</name>
              <value>test_resource</value>
            </property>
            <property>
              <name>skill</name>
              <value>Spanish</value>
            </property>
            <property>
              <name>ratio</name>
              <value>100</value>
            </property>
          </properties>
        </skill>
      </skills>
    </ns1:get_resources_skills>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
<property>
  <name>skill</name>
  <value>Phone</value>
</property>
<property>
  <name>ratio</name>
  <value>75</value>
</property>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>test_resource1</value>
    </property>
    <property>
      <name>skill</name>
      <value>Upgrade</value>
    </property>
    <property>
      <name>ratio</name>
      <value>75</value>
    </property>
  </properties>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>test_subbuscet</value>
    </property>
    <property>
      <name>skill</name>
      <value>Trouble Call</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>

<property>
  <name>skill</name>
  <value>Trouble Call</value>
</property>
<property>
  <name>ratio</name>
  <value>10</value>
</property>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>test_resource2</value>
    </property>
    <property>
      <name>skill</name>
      <value>Trouble Call</value>
    </property>
    <property>
      <name>ratio</name>
      <value>75</value>
    </property>
  </properties>
</skill>

<skill>
  <properties>
    <property>
      <name>resource_id</name>
      <value>test_resource4</value>
    </property>
    <property>
      <name>skill</name>
      <value>Trouble Call</value>
    </property>
    <property>
      <name>ratio</name>
      <value>100</value>
    </property>
  </properties>
</skill>
<name>skill</name>
<value>Upgrade</value>
</property>
</skill>
(skill)
<properties>
<property>
<name>resource_id</name>
<value>test_subbucket</value>
</property>
<name>skill</name>
<value>Upgrade</value>
</property>
<name>ratio</name>
<value>100</value>
</property>
</skill>
<skill>
<properties>
<property>
<name>resource_id</name>
<value>test_tech</value>
</property>
<name>skill</name>
<value>Trouble Call</value>
</property>
<name>ratio</name>
<value>100</value>
</property>
</skill>
(skill)
<properties>
<property>
<name>resource_id</name> <value>test_tech</value>
</property>
<name>skill</name>
<value>Spanish</value>
</property>
<name>ratio</name>
<value>50</value>
</property>
</skill>
(skill)
<properties>
<property>
<name>resource_id</name>
<value>test_tech</value>
</property>
<name>skill</name>
<value>Install</value>
</property>
<name>ratio</name>
<value>70</value>
</property>
</skill>
'update_locations' Method

The 'update_locations' method is used to create or update resources' locations. If no location with the specified 'resource_id' and 'label' exists, such location is created. If a location with the specified 'resource_id' and 'label' exists, such location is updated.

'update_locations' Request

The 'update_locations' method is used to create or update resources' locations. If no location with the specified 'resource_id' and 'label' exists, such location is created. If a location with the specified 'resource_id' and 'label' exists, such location is updated.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>struct</td>
<td>Yes</td>
<td>'user' structure</td>
</tr>
<tr>
<td>locations</td>
<td>array</td>
<td>Yes</td>
<td>array of 'location' elements each containing the data on the resource and the location to be assigned to such resource</td>
</tr>
</tbody>
</table>

- 'location' Array of 'update_locations' request

The 'location' array of the 'update_locations' method consists of 'properties' elements being arrays of 'property' elements defining the properties of the location to be assigned to the resource. The following properties can be defined with the 'update_locations' method:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>label</td>
<td>string</td>
<td>Yes</td>
<td>location identifier</td>
</tr>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>identifier of the resource to which the location belongs</td>
</tr>
<tr>
<td>city</td>
<td>string</td>
<td>No</td>
<td>location address</td>
</tr>
<tr>
<td>state</td>
<td>string</td>
<td>No</td>
<td>Note: these fields are used by geocoding and, therefore, must contain a valid address. Other values will not be resolved correctly by the geocoding server.</td>
</tr>
<tr>
<td>zip</td>
<td>string</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
• 'update_locations' request Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                 xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:update_locations>
      <user>
        <now>2014-05-15T08:23+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>6f9ce1abe552563338fd98536024a40b</auth_string>
      </user>
      <locations>
        <location>
          <properties>
            <property>
              <name>resource_id</name>
              <value>Resource1</value>
            </property>
            <property>
              <name>label</name>
              <value>Warehouse</value>
            </property>
            <property>
              <name>city</name>
              <value>Orlando</value>
            </property>
            <property>
              <name>street</name>
              <value>111350-11398 University Blvd.</value>
            </property>
          </properties>
        </location>
        <location>
          <properties>
            <property>
              <name>resource_id</name>
              <value>Resource2</value>
            </property>
            <property>
              <name>label</name>
              <value>Garage</value>
            </property>
            <property>
              <name>latitude</name>
              <value>28.59752</value>
            </property>
            <property>
              <name>longitude</name>
              <value>-81.22226</value>
            </property>
          </properties>
        </location>
      </locations>
    </urn:update_locations>
  </soapenv:Body>
</soapenv:Envelope>
```
'update_locations' Response

The response of 'update_locations' contains data on the method success/failure as well as on the success/failure of each location to be assigned according to the request.

The response of 'update_locations' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>location_results</td>
<td>array</td>
<td>array of 'location_result' elements each containing data on the success/failure of a single location record</td>
</tr>
</tbody>
</table>

• 'location_result' Element of 'update_locations' response

Each 'location_result' element contains data on the success/failure of each location to be assigned according to the request. The 'location_result' element contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result for the specific location defined within a request</td>
</tr>
<tr>
<td>result_message</td>
<td>string</td>
<td></td>
</tr>
</tbody>
</table>

• 'update_locations' response Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:update_locations_response>
      <result_code>0</result_code>
      <location_results>
        <location_result>
          <result_code>0</result_code>
          <result_message>created</result_message>
        </location_result>
        <location_result>
          <result_code>32423</result_code>
          <result_message>Error does not exist: "Resource2"</result_message>
        </location_result>
      </location_results>
    </urn:update_locations_response>
  </soapenv:Body>
</soapenv:Envelope>
```
'delete_locations' Method

The 'delete_locations' method is used to delete existing locations.

'delete_locations' Request

The 'delete_locations' request specifies the locations to be deleted. The request must contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>struct</td>
<td>Yes</td>
<td>'user' structure</td>
</tr>
<tr>
<td>locations</td>
<td>array</td>
<td>Yes</td>
<td>array of 'location' elements each containing the data on the location to be deleted</td>
</tr>
</tbody>
</table>

• 'location' Array of 'delete_locations' request

The 'location' array of the 'delete_locations' method consists of 'properties' elements being arrays of 'property' elements containing data of the locations to be deleted. The following properties must be specified in the 'delete_locations' request:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>label</td>
<td>string</td>
<td>Yes</td>
<td>identifier of the location to be deleted</td>
</tr>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource from which the location is to be deleted</td>
</tr>
</tbody>
</table>

• 'delete_locations' request Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/
xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:delete_locations>
      <user>
        <now>2014-05-15T08:09:23+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>6f9ce1abe552563338fd9853 6024a40b</auth_string>
      </user>
      <locations>
        <location>
          <properties>
            <property>
              <name>resource_id</name>
              <value>Resource1</value>
            </property>
            <property>
              <name>label</name>
              <value>Warehouse</value>
            </property>
          </properties>
        </location>
      </locations>
    </urn:delete_locations>
  </soapenv:Body>
</soapenv:Envelope>
```
'delete_locations' Response

The response of 'delete_locations' contains data on the method success/failure as well as on the success/failure of each location deletion.

The response of 'delete_locations' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>location_results</td>
<td>array</td>
<td>array of 'location_result' elements each containing data on the success/failure of a single location record</td>
</tr>
</tbody>
</table>

- 'location_result' Element of 'delete_locations' response

Each 'location_result' element data contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result for the specific location defined within a request</td>
</tr>
<tr>
<td>result_message</td>
<td>string</td>
<td></td>
</tr>
</tbody>
</table>

- 'delete_locations' response Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                   xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:delete_locations_response>
      <result_code>0</result_code>
      <location_results>
        <location_result>
          ...<properties>
          <location>
            <properties>
              <property><name>resource_id</name><value>Resource2</value></property>
              <property><name>label</name><value>Garage</value></property>
            </properties>
          </location>
        </location_result>
      </location_results>
    </urn:delete_locations_response>
  </soapenv:Body>
</soapenv:Envelope>
```
The 'get_locations' method is used to retrieve the locations assigned to the specified resource and, optionally, its child resources.

'get_locations' Request

Requests of 'get_locations' method must specify the resources whose locations are to be retrieved. They contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>Yes</td>
<td>struct</td>
<td>'user' structure</td>
</tr>
<tr>
<td>resources</td>
<td>array</td>
<td>Yes</td>
<td>array of 'resource' elements defining the resources for which locations are to be returned</td>
</tr>
</tbody>
</table>

- 'resource' Element of 'get_locations' Request

The 'resource' element of the 'get_locations' request contains the following parameters:

<table>
<thead>
<tr>
<th>Name</th>
<th>Required</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource for which locations are to be retrieved</td>
</tr>
<tr>
<td>include_children</td>
<td>enum</td>
<td>No</td>
<td>parameter defining if locations of subordinate resources are to be returned</td>
</tr>
</tbody>
</table>

valid values:

- none – only the specified resource’s locations will be returned
- immediate – locations of the specified resource and the ones directly below it (first level of descendants) are returned
- all – locations of the specified resource and all of those below it in the Resource Tree hierarchy are returned

default value: none

'get_locations' Request Example
'get_locations' Response

The response of 'get_locations' contains data on the method success/failure as well as the locations for each resource specified in the request and their properties. The response of 'get_locations' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>locations</td>
<td>array</td>
<td>array of 'location' elements each containing data on a location assigned to the resource specified in the request</td>
</tr>
</tbody>
</table>

- 'location' Array of 'get_locations' response

The 'location' array of the 'get_locations' response consists of 'properties' elements being arrays of 'property' elements containing data of the locations assigned to the resources specified in the request. The following properties must be specified in the 'delete_locations' request:

The following properties can returned:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>label</td>
<td>string</td>
<td>location identifier</td>
</tr>
<tr>
<td>resource_id</td>
<td>string</td>
<td>external ID of the resource to which the location is assigned</td>
</tr>
<tr>
<td>city</td>
<td>string</td>
<td>location address</td>
</tr>
</tbody>
</table>

...
state string

zip string

street string

latitude string geographic coordinates of the location

longitude string

coord_status string method of determining the geographic coordinates of the location

possible values:

- manual – coordinates set manually via GUI or API
- geocoded – coordinates set by geocoding address fields
- unable_to_geocode – geocoding failed, no location coordinates available
- not_yet_geocoded – geocoding has not been performed, no coordinates available

- ‘get_locations’ response Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/
 xmlns:urn="urn:toatech:ResourceManagement:1.0">
<soapenv:Header/>
<soapenv:Body>
<urn:get_locations_response>
<result_code>0</result_code>
<locations>
<location>
<properties>
<property>
<name>resource_id</name>
[value>Resource1</value>
</property>
<property>
<name>label</name>
[value>Warehouse</value>
</property>
<property>
<name>city</name>
[value>Orlando</value>
</property>
<property>
<name>street</name>
[value>111350-11398 University Blvd.</value>
</property>
<property>
<name>latitude</name>
[value>28.59752</value>
</property>
<property>
<name>longitude</name>
[value>-81.22226</value>
</property>
</properties>
</location>
<locations>
</urn:get_locations_response>
</soapenv:Body>
</soapenv:Envelope>
```
'set_resources_locations' Method

The 'set_resources_locations' method is used to assign 'start', 'end' and 'home zone center' locations to resources or to remove the existing location assignments from resources.

When the 'location_label' is specified, such location is assigned to the resource as the location of the defined 'type'. When the 'location_label' is empty, such location is removed from the resource for the weekdays specified in the request.

'set_resources_locations' Request

The 'set_resources_locations' request specifies the locations to be set. The request must contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>struct</td>
<td>Yes</td>
<td>'user' structure</td>
</tr>
<tr>
<td>resource_locations</td>
<td>array</td>
<td>Yes</td>
<td>array of 'resource_location' elements each defining relation between the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>resource and the location</td>
</tr>
</tbody>
</table>

- 'resource_location' Element of 'set_resources_locations' request

The 'resource_location' element of the 'set_resources_locations' request contains the following parameters:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource_id</td>
<td>string</td>
<td>Yes</td>
<td>external ID of the resource locations are to be assigned to or removed from</td>
</tr>
<tr>
<td>location_label</td>
<td>string</td>
<td>Yes</td>
<td>location label</td>
</tr>
<tr>
<td>type</td>
<td>enum</td>
<td>Yes</td>
<td>type of location assigned to the resource</td>
</tr>
<tr>
<td>weekdays</td>
<td>array</td>
<td>Yes</td>
<td>Array of 'wd' elements. Each 'wd' element contains a weekday string.</td>
</tr>
</tbody>
</table>

Contains weekdays on which the specified location is assigned to the resource as the location of the specified type.

valid values of wd elements: Mon, Tue, Wed, Thu, Fri, Sat, Sun, all (all weekdays)

'set_resources_locations' request Example
Oracle Field Service Cloud
Integrating with Resource Management API
Chapter 4
Detailed Methods Description

`set_resources_locations' Response

The response of 'set_resources_locations' contains data on the method success/failure as well as on the success/failure of each location to be set according to the request. The response of 'set_resources_locations' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result_code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>resource_location_results</td>
<td>array</td>
<td>array of 'resource_location_result' elements each containing data on the success/failure of a single location assignment</td>
</tr>
</tbody>
</table>

* 'resource_location_result' Element of 'set_resources_locations' response

The 'resource_location_result' element contains data on the success/failure of a single location assignment and consists of the following elements:

The following properties can returned:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 'set_resources_locations' response Example

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/
xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:set_resources_locations_response>
      <result_code>0</result_code>
      <resource_location_results>
        <resource_location_result>
          <result_code>0</result_code>
          <result_message>Set 'Resource1' 'start' to 'Resource1_Location' for weekdays 'All'</result_message>
        </resource_location_result>
        <resource_location_result>
          <result_code>23423</result_code>
          <result_message>Location is not visible to resource. Resource_id='Resource2'. Location='Resource1_Location'</result_message>
        </resource_location_result>
      </resource_location_results>
    </urn:set_resources_locations_response>
  </soapenv:Body>
</soapenv:Envelope>
```

### 'get_resources_locations' Method

The 'get_resources_locations' method is used to retrieve 'start', 'end' and 'home zone center' locations assigned to the specified resources.

### 'get_resources_locations' Request

Requests of 'get_resources_locations' method must specify the resources for which 'start', 'end' and 'home zone center' locations are to be retrieved. They contain the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>struct</td>
<td>Yes</td>
<td>'user' structure</td>
</tr>
<tr>
<td>resources</td>
<td>array</td>
<td>Yes</td>
<td>array of 'resource' elements defining the resources for which locations are to be returned</td>
</tr>
</tbody>
</table>

- **resource** Element of 'get_resources_locations' request

  The 'resource' element of the 'get_locations' request contains the following parameters:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
</table>

---

**Oracle Field Service Cloud**

**Integrating with Resource Management API**

**Chapter 4**

**Detailed Methods Description**
resource_id  string  Yes  
external ID of the resource locations are to be assigned to or removed from

include_children  enum  No  
parameter defining if locations of subordinate resources are to be returned

valid values:
- none – only the specified resource’s locations will be returned
- immediate – locations of the specified resource and the ones directly below it (first level of descendants) are returned
- all – locations of the specified resource and all of those below it in the Resource Tree hierarchy are returned

default value: none

- 'get_resources_locations' request Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:get_resources_locations>
      <user>
        <now>2014-05-15T08:09:23+00:00</now>
        <login>root</login>
        <company>sunrise</company>
        <auth_string>6f9ce1abe552563338fd98536024a40b</auth_string>
      </user>
      <resources>
        <resource>
          <resource_id>TestBucket</resource_id>
          <include_children>immediate</include_children>
        </resource>
        <resource>
          <resource_id>Resource1</resource_id>
        </resource>
      </resources>
    </urn:get_resources_locations>
  </soapenv:Body>
</soapenv:Envelope>
```

'get_resources_locations' Response

The response of 'get_locations' contains data on the method success/failure as well as the locations for each resource specified in the request and their properties. The response of 'get_resources_locations' contains the following elements:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>int</td>
<td>transaction result code</td>
</tr>
<tr>
<td>error_msg</td>
<td>string</td>
<td>transaction error description (if 'result_code' is other than '0')</td>
</tr>
<tr>
<td>resource_locations</td>
<td>array</td>
<td>array of 'resource_location' elements each containing data on a location assigned to the resource specified in the request</td>
</tr>
</tbody>
</table>

- 'resource_location' Element of 'get_resources_locations' response
The 'resource_location' element of the 'get_resources_locations' response contains properties of the location assigned to the specified resource.

The following properties can be returned:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resource_id</td>
<td>string</td>
<td>external ID of the resource to which the locations are assigned</td>
</tr>
<tr>
<td>location_label</td>
<td>string</td>
<td>location label</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contains the label of an existing location added by the 'update_locations' method or through Manage.</td>
</tr>
<tr>
<td>type</td>
<td>enum</td>
<td>type of location assigned to the resource</td>
</tr>
<tr>
<td>weekdays</td>
<td>array</td>
<td>Array of 'wd' elements. Each 'wd' element contains a weekday string.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contains weekdays on which the specified location is assigned to the resource as the location of the specified type.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>possible values of wd elements: Mon, Tue, Wed, Thu, Fri, Sat, Sun, all (all weekdays)</td>
</tr>
</tbody>
</table>

- 'get_resources_locations' response Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                  xmlns:urn="urn:toatech:ResourceManagement:1.0">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:get_resources_locations_response>
      <result_code>0</result_code>
      <resource_locations>
        <resource_location>
          <resource_id>Resource1</resource_id>
          <location_label>Resource1_Location</location_label>
          <type>start</type>
          <weekdays>
            <wd>Mon</wd>
            <wd>Tue</wd>
            <wd>Wed</wd>
          </weekdays>
        </resource_location>
        <resource_location>
          <resource_id>Resource2</resource_id>
          <location_label>Resource1_Location</location_label>
          <type>end</type>
          <weekdays>
            <wd>All</wd>
          </weekdays>
        </resource_location>
      </resource_locations>
    </urn:get_resources_locations_response>
  </soapenv:Body>
</soapenv:Envelope>
```
5 Transaction Errors

Transaction Errors

For each request a response is returned. If an error occurs in the course of transaction processing, the corresponding error response is returned. This can be a SOAP fault (wrong or unknown request is sent) or an error response (a valid request contains invalid element(s)).

SOAP Faults

In case of errors standard SOAP Faults are returned. Soap Fault contains the following fields:

<table>
<thead>
<tr>
<th>Soap Fault field</th>
<th>Possible values of this field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>faultcode</td>
<td>Client, Server</td>
<td>This field is always returned.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Client – means that the problem is with the request – either request has incorrect format, or invalid authentication info is supplied etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Server – means that the problem is on Oracle Field Service Cloud side.</td>
</tr>
<tr>
<td>faultstring</td>
<td>Authentication Failed, Unknown location, Bad request format, etc.</td>
<td>This field is always returned.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It contains human-readable description of error</td>
</tr>
<tr>
<td>faultactor</td>
<td>DISPATCHER, get_capacity, &lt;absent&gt;</td>
<td>This field is optional.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This field is for diagnostic purposes and may be ignored by the Client Application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It signifies which part of Oracle Field Service Cloud system generated the Soap Fault.</td>
</tr>
<tr>
<td>detail</td>
<td>element containing children: errorCode, errorDetail</td>
<td>This field is optional.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This field contains Oracle Field Service Cloud specific subfields: errorCode, errorDetail.</td>
</tr>
</tbody>
</table>

SOAP Fault Example

```xml
<?xml version="1.0"?>
  <SOAP-ENV:Body>
    <SOAP-ENV:Fault>
      <faultcode>SOAP-ENV:Client</faultcode>
      <faultstring>Unknown location</faultstring>
      <faultactor>get_capacity</faultactor>
      <detail>
```
Error Responses

All responses contain a result code and description, when applicable (when the 'result_code' is other than '0').

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>result_code</td>
<td>result of the performed operation</td>
</tr>
<tr>
<td></td>
<td>'result_code' is returned in every response.</td>
</tr>
<tr>
<td></td>
<td>For a successful transaction 'result_code' = 0 is returned.</td>
</tr>
<tr>
<td></td>
<td>If transaction fails, the 'result_code' &gt; 0.</td>
</tr>
<tr>
<td>error_msg</td>
<td>more specific description of the error</td>
</tr>
<tr>
<td></td>
<td>'error_msg' is returned only if 'result_code' is other than 0.</td>
</tr>
</tbody>
</table>

• Error Response Example

```
<?xml version="1.0" encoding="UTF-8"?>
 xmlns:ns1="urn:toatech:ResourceManagement:1.0">
 <SOAP-ENV:Body>
  <ns1:insert_user_response>
   <result_code>15</result_code>
   <error_msg>Cannot insert the user</error_msg>
  </ns1:insert_user_response>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Error Codes

Error codes related to the Resource Management API methods:

<table>
<thead>
<tr>
<th>Code</th>
<th>Error Message Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>no error. Request has been successfully processed</td>
</tr>
<tr>
<td>3</td>
<td>Key field is not visible to caller: login</td>
<td>the login of the user is missing</td>
</tr>
<tr>
<td>4</td>
<td>Cannot get the profiles list</td>
<td>the security_profile list is unavailable</td>
</tr>
<tr>
<td>Code</td>
<td>Error Message Example</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>6</td>
<td>Unknown login_policy: ‘nonexistent’</td>
<td>the user policy name cannot be found in the policy list</td>
</tr>
<tr>
<td>7</td>
<td>Mandatory property missing: ‘status’</td>
<td>user status is missing</td>
</tr>
<tr>
<td>9</td>
<td>Mandatory property missing: ‘language’</td>
<td>user language is missing</td>
</tr>
<tr>
<td>11</td>
<td>Unknown language: ‘language’</td>
<td>the user language cannot be found in the language list</td>
</tr>
<tr>
<td>12</td>
<td>Mandatory property missing: ‘time_zone’</td>
<td>user time zone is missing</td>
</tr>
<tr>
<td>13</td>
<td>The timezone 'nonexistent' cannot be found</td>
<td>the user time zone cannot be found in the time zone list</td>
</tr>
<tr>
<td>14</td>
<td>Mandatory property missing: ‘password’</td>
<td>user password is not set</td>
</tr>
<tr>
<td>15</td>
<td>Cannot insert the user</td>
<td>the user cannot be added</td>
</tr>
<tr>
<td>16</td>
<td>User 'test_x_update_login-changed' does not exist</td>
<td>the user with login [login] is absent</td>
</tr>
<tr>
<td>17</td>
<td>Cannot update the user</td>
<td>the user cannot be updated [login]</td>
</tr>
<tr>
<td>23</td>
<td>Key field is not visible to caller: external_id</td>
<td>external ID of the resource is missing</td>
</tr>
<tr>
<td>24</td>
<td>Resource does not exist: 'test.2.nonexistent'</td>
<td>the resource cannot be found</td>
</tr>
<tr>
<td>26</td>
<td>Cant change resource type</td>
<td>operation cannot be performed for the resource type</td>
</tr>
<tr>
<td>28</td>
<td>Cannot insert resource</td>
<td>resource cannot be added (only for 'insert_resource')</td>
</tr>
<tr>
<td>33</td>
<td>Authentication failed</td>
<td>authentication unsuccessful</td>
</tr>
<tr>
<td>36</td>
<td>Invalid property value: ‘status’ Valid values: ‘active’, ‘inactive’</td>
<td>the status value is not either ‘active’ or ‘inactive’</td>
</tr>
<tr>
<td>42</td>
<td>User with login '{login}' already exists</td>
<td>user with login to be set for the user being created already exists</td>
</tr>
<tr>
<td>46</td>
<td>The display profile '{profile}' cannot be found</td>
<td>defined display profile cannot be found</td>
</tr>
<tr>
<td>50</td>
<td>Unknown profile: '{profile}'</td>
<td>defined profile cannot be found</td>
</tr>
</tbody>
</table>
## Code  | Error Message Example                                                                 | Description                                           |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Unknown resource: '{resource}'</td>
<td>defined resource cannot be found</td>
</tr>
<tr>
<td>60</td>
<td>Element not found: calendars/calendar[0]/properties/property</td>
<td>returned if request is invalid (details in the error message)</td>
</tr>
<tr>
<td>90</td>
<td>Invalid property value 'time_format': 'x'. Valid values are: '12-hour', '24-hour'</td>
<td>returned if a property value is invalid (details in the error message)</td>
</tr>
<tr>
<td>100</td>
<td>No permission</td>
<td>the user has no permission for the action</td>
</tr>
<tr>
<td>101</td>
<td>No permission to add user with specified 'resources' and 'profiles'. Calling user's (login) Managed Profiles must contain profiles of the user being added.</td>
<td>the user making the 'insert_user' or 'update_user' request does not have the profiles specified in the 'profiles' and/or 'managed_profiles' element in their own managed profiles</td>
</tr>
<tr>
<td>103</td>
<td>Invalid user type</td>
<td>returned on an attempt to assign a nonexistent user type to a user</td>
</tr>
</tbody>
</table>
OFSC Glossary Keys