Cisco UCS Director REST Developer Guide, Release 4.1

First Published: 2013-12-16
Last Modified: 2014-04-23

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Text Part Number: OL-31097-04
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New and Changed Information 1

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Preface

This preface contains the following sections:

- Audience, page vii
- Conventions, page vii
- Related Documentation, page ix
- Documentation Feedback, page ix
- Obtaining Documentation and Submitting a Service Request, page ix

Audience

This guide is intended for software engineers with expertise using APIs to develop and extend applications. These engineers should understand Cisco UCS and related networking and storage protocols, and have experience working with JSON, XML, and Java.

Conventions

<table>
<thead>
<tr>
<th>Text Type</th>
<th>Indication</th>
</tr>
</thead>
</table>
| GUI elements    | GUI elements such as tab titles, area names, and field labels appear in this font.  
|                 | Main titles such as window, dialog box, and wizard titles appear in this font. |
| TUI elements    | In a Text-based User Interface, text the system displays appears in this font. |
| System output   | Terminal sessions and information that the system displays appear in this font. |
| CLI commands    | CLI command keywords appear in this font.  
<p>|                 | Variables in a CLI command appear in this font.                            |</p>
<table>
<thead>
<tr>
<th>Text Type</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>Elements in square brackets are optional.</td>
</tr>
<tr>
<td>{x</td>
<td>y</td>
</tr>
<tr>
<td>[x</td>
<td>y</td>
</tr>
<tr>
<td>string</td>
<td>A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>Nonprinting characters such as passwords are in angle brackets.</td>
</tr>
<tr>
<td>[ ]</td>
<td>Default responses to system prompts are in square brackets.</td>
</tr>
<tr>
<td>!, #</td>
<td>An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.</td>
</tr>
</tbody>
</table>

**Note**

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

**Tip**

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

**Caution**

Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

**Timesaver**

Means *the described action saves time*. You can save time by performing the action described in the paragraph.

**Warning**

**IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS
Related Documentation

Cisco UCS Director Documentation Roadmap

Cisco UCS Documentation Roadmaps
For a complete list of all B-Series documentation, see the *Cisco UCS B-Series Servers Documentation Roadmap* available at the following URL: [http://www.cisco.com/go/unifiedcomputing/b-series-doc](http://www.cisco.com/go/unifiedcomputing/b-series-doc).
For a complete list of all C-Series documentation, see the *Cisco UCS C-Series Servers Documentation Roadmap* available at the following URL: [http://www.cisco.com/go/unifiedcomputing/c-series-doc](http://www.cisco.com/go/unifiedcomputing/c-series-doc).

Note
The *Cisco UCS B-Series Servers Documentation Roadmap* includes links to documentation for Cisco UCS Manager and Cisco UCS Central. The *Cisco UCS C-Series Servers Documentation Roadmap* includes links to documentation for Cisco Integrated Management Controller.

Documentation Feedback
To provide technical feedback on this document, or to report an error or omission, please send your comments to [ucs-director-docfeedback@cisco.com](mailto:ucs-director-docfeedback@cisco.com). We appreciate your feedback.

Obtaining Documentation and Submitting a Service Request
For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation.
Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.
New and Changed Information for this Release

- New and Changed Information, page 1

New and Changed Information

The following table provides an overview of the significant changes to this guide for this current release of 4.1.0.3. The table does not provide an exhaustive list of all changes made to this guide or of all new features in this release.

Table 1: New Information

<table>
<thead>
<tr>
<th>Feature</th>
<th>What's New</th>
<th>Where Documented</th>
</tr>
</thead>
<tbody>
<tr>
<td>REST API support for Service Container</td>
<td>userAPIGetApplicationContainerTemplateDetails</td>
<td>Service Container Operations, on page 30</td>
</tr>
<tr>
<td></td>
<td>• userAPIGetVNCURL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPIGetServiceContainerDetails</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPIGetServiceContainerVirtualInfraPolicy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPIAddVMSServiceContainer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPIPowerOnServiceContainer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPIPowerOffServiceContainer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPIDeleteServiceContainer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• userAPICloneServiceContainer</td>
<td></td>
</tr>
<tr>
<td>Reports</td>
<td>userAPIGetServiceContainerDetails (tabular report)</td>
<td>Reports and JSON Object Response Samples, on page 62</td>
</tr>
</tbody>
</table>
### Table 2: Changed Information

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Where Documented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Request Operations</td>
<td>Updated the workflow status of userAPIGetServiceRequestWorkFlow</td>
<td>Service Request Operations, on page 34</td>
</tr>
<tr>
<td>VM Operations</td>
<td>Updated the parameters of userAPIGetAllVMs</td>
<td>VM Operations, on page 40</td>
</tr>
</tbody>
</table>
Overview

This chapter contains the following sections:

- About the Cisco UCS Director REST API, page 3
- Access Privileges, page 3
- Supported Protocols and Formats, page 4
- Recommended Tools, page 4

About the Cisco UCS Director REST API

The REST API enables you to perform operations on resources and to integrate these operations into applications so that they can provide API-supported functionality and features.

You can use applications developed using this REST (Representational State Transfer) API to do the following:

- Get reports about physical and virtual devices, networks, appliances, groups and users, policies, administration, resource accounting, funds, and other monitored entities within your Cisco UCS domains.
- Invoke orchestrator workflow and task operations.
- Invoke additional operations specific to.

Access Privileges

With appropriate access privileges, you can use the APIs to get any report made available through. Access to the API interface is limited to registered user accounts. Secure access is administered through the use of the REST API Access Key, which is a unique key code assigned to each user account. A user account is administratively associated with a user type, so this access key determines the user account's level of access to information exposed through the API.

Different user types have access to different categories of data. A administrator defines the access rules associated with each user type. For more information on the end-user and administrator user types and the data accessible to each type of user, see the http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-director/products-maintenance-guides-list.html or contact your system administrator. Work with your system administrator to get the necessary user access privileges for your project.
Supported Protocols and Formats

REST APIs are compatible with any HTTP or HTTPS browser. The REST APIs use code formatted in JSON and XML. A Java API is also available.

**JSON**

Unless otherwise noted, the API documentation refers to REST API request arguments and responses (payload data) that are encoded in JSON (JavaScript Object Notation) format. For more information, see [http://www.json.org](http://www.json.org) or [http://en.wikipedia.org/wiki/JSON](http://en.wikipedia.org/wiki/JSON).

---

**Note**

Live and valid UCS Director REST API requests and responses in JSON format are provided within. These provide excellent examples of JSON protocols and formatting. To see this API data, you must first enable the developer menus and then use the **Report Metadata** option available on any report in. For more information, see [Enabling the Developer Menu Options](#), on page 8.

**XML**

For information about using XML-formatted REST API requests, see [Using the REST API Browser](#), on page 8. This provides information about using the REST API browser, which is embedded in.

**Java**

For information about using the Java API, see the **REST API Javadocs** and the **Open Automation API Javadocs**.

---

**Recommended Tools**

The API uses HTTP or HTTPS as communication protocols. Any compatible browser or client with user account access can be used to submit requests to the API. Most programming languages have built-in or open source libraries that provide REST API access and parsing of JSON and XML.

For exploring and testing the APIs, we recommend the following software tools and options:

**Developer Menu Options**

includes Developer Menu options that include crucial features and tools for developers, such as **Report Metadata** and access to the Rest API Browser. To enable these options, see [Accessing the Report Metadata](#), on page 9.

**Mozilla Firefox RESTClient Add-On**

RESTClient is a Mozilla FireFox add-on that provides useful options for parsing and viewing API requests and responses. See [https://addons.mozilla.org/en-US/firefox/addon/restclient/?src=ss](https://addons.mozilla.org/en-US/firefox/addon/restclient/?src=ss), but check for more recent releases.
If you are currently logged into with user account credentials that your application will use, you should be able to use any supported web browser to send API requests and get responses. However, the Mozilla Firefox RESTClient add-on provides a standalone client that also parses and labels the API data in a useful and informative way.

**Note**

REST API Browser

The REST API Browser is available in the Orchestration area of. It provides API information and API code generation capabilities that make it easy to see and work with all of the available APIs, including both the REST APIs and the Java API.

After you enable the developer menu, you can access this feature and get extensive information about exposed APIs, including the REST API in XML format and the Java API. For more information, see Using the REST API Browser, on page 8.
Getting Started

This chapter contains the following sections:

- About the API Access Key, page 7
- Generating an API Access Key, page 7
- Enabling the Developer Menu Options, page 8
- Using the REST API Browser, page 8
- Accessing the Report Metadata, page 9
- Request Format, page 10
- Response Format, page 13

About the API Access Key

To access through the API interface, you must have a valid user account and an API access key. The API access key is required for to authenticate API requests. This access key is a unique security access key code that is associated with a specific, valid user account.

To authenticate API requests, all APIs require the API access key for authentication. You must pass the REST API access key as a `name:value` header following standard HTTP syntax and semantic rules. For example, a valid `name:value` header is `X-Cloupia-Request-Key: F90ZZF12345678ZZ90Z12Z3456FZ789`. For more information about the API request header, see Request Format, on page 10 and RFC2616 Header Field Definitions.

To provide data security, send all requests over an HTTPs (SSL) connection.

Generating an API Access Key

Procedure

**Step 1**
In , click your login name in the upper right. For example, if you logged in as admin, displays `admin` in the upper right.
Enabling the Developer Menu Options

includes features and capabilities that are intended expressly for developers and engineers. After you enable
the Developer Menus option, you have access to the integrated REST API Browser and Report Metadata
information. These features provide you with site-specific API data and with REST API request code that
you can send through any standard HTTP or HTTPS browser. The HTTP request code provided by the Report
Metadata views yields immediate API service results. Plan to use these options in every situation where you
need API information.

The REST API Browser provides API information and API code generation capabilities that make it easy to
see and work with all of the available APIs, including both the REST APIs and the Java API.

Before You Begin

Obtain one or more user accounts that provide exactly the same administrative access to data that your
application users will have. Your administrator can explain the data access limitations associated with different
administrator and end-user roles. You may want multiple user accounts in order to test the user-experiences
associated with different data access and security controls.

Procedure

Step 1 In , click your login name in the upper right.
For example, if you logged in as admin, displays admin in the upper right.

Step 2 In the User Information dialog box, click the Advanced tab.

Step 3 Check the Enable Developer Menu (for this session) check box and close the User Information dialog box.
The REST API Browser is activated for the duration of the current session, and the Report Metadata option
becomes available in the report views opened in the session.

Tip The Advanced tab also displays the REST API Access Key code for the account.

Step 4 Close the User Information dialog box.

Using the REST API Browser

The REST API Browser provides API information and API code generation capabilities that assist and educate
Developers in the use of all available exposed APIs, including the XML-formatted REST API and the Java
API. The primary view lists the Task folders, each of which provides access to the APIs. The task name effectively supplies the top-level context or category folder under which the APIs are listed. For example, all the APIs pertaining to NetApp ONTAP tasks and NetApp OnCommand tasks are available inside the folders with these names.

**Before You Begin**

- Obtain one or more user accounts that provide exactly the same administrative access to data that your application users will have. Your administrator can explain the data access limitations associated with different administrator and end-user roles. You may want multiple user accounts in order to test the user-experiences associated with different data access and security controls.

- Enable the Developer Menu options for the session.

**Procedure**

**Step 1** On the menu bar, choose **Policies > Orchestration**.

**Step 2** Click the **REST API Browser** tab. Click the right scroll arrow, if necessary, to navigate to the **REST API Browser** tab.

**Step 3** Open the task folder that contains the API you want to view.

**Tip** You can use the **Search** field at the top right corner of the **Rest API Browser** tab to find a specific API if you do not know which task folder it belongs in. Enter a string that occurs in the API Resource, Operation or Description fields to narrow your search. You can also use the other options on that menu bar, such as the **Add Advanced Filter**, to help you find a specific API.

**Step 4** Double-click a row that contains an API resource and operation that interests you. The REST API browser displays the following:

- **API Examples** tab—Displays the API data for your selection and enables you to generate a sample URL. Depending on the operation and resource that you selected, this tab might also include data entry boxes that accept parameter values and enable you to construct a successful API request. If available in a data entry box, click **Select...** to open data search filters that can help you sort out and select the data that you need to enter.

- **Details** tab—Provides additional details about the API, including the API definition, input parameters, and output parameters.

- **Sample Java Code** tab—Provides sample code for the API.

**Accessing the Report Metadata**

Report Metadata enables you to view the API code used by, including the API request code for every report displayed in. This code includes complete URL code that is ready to paste into a browser and send. The immediate API responses provide a trove of information and education for the developer. To see the API request code, you simply navigate to a report, select **Report Metadata**, and scroll down through the resulting list to the API request used to fetch the report.
Before You Begin

• Obtain one or more user accounts that provide exactly the same administrative access to data that your application users will have. Your administrator can explain the data access limitations associated with different administrator and end-user roles. You may want multiple user accounts in order to test the user-experiences associated with different data access and security controls.

• Enable the Developer Menu options for the session.

Procedure

Step 1 In , navigate to the page for which you want to see the API code. For example, choose one of the following:
  • Policies > Orchestration
  • Physical > Storage > Storage_Account > Filers

Step 2 Click Report Metadata.

Step 3 In the Information dialog box, review the sample code.

Request Format

API clients can use HTTP or HTTPS to interact with . To pass the REST API access key, each request must be associated with an http/https header called X-Cloupia-Request-Key with its value set to the current REST API Access Key. For information about getting and using this key, see Generating an API Access Key, on page 7.

URL Format

http://SERVER/app/api/rest?formatType=json&opName=operationName&opData=operationData

where SERVER is the IP address of the hostname of the VM, and where opName is the API operation name associated with the request. For example:
userAPIGetMyLoginProfile, or userAPIGetVMActionStatus,
and where opData includes the JSON parameters (the arguments associated with the operation).

Request URL Parameters

• formatType—The only supported format that is discussed here is JavaScript Object Notation (JSON). Set this parameter value to json.

• opName—The operation name associated with the request. A list of operations is provided in About the REST API Operations, on page 16.

• opData—Parameters (or arguments) associated with the operation. uses JSON encoding of the parameters. If no arguments are required for the operation, use {} as an empty set. Before you send JSON data in a
request, you must apply escape characters as appropriate. For details about encoding the URL, see the RFC at http://www.ietf.org/rfc/rfc1738.txt.

For more information about JSON syntax and data types, see http://en.wikipedia.org/wiki/JSON#Data_types, syntax_and_example.

For information about non-JSON formatted API requests, see Using the REST API Browser, on page 8.

### About Operations Data Parameters/Arguments

Because the method and a generic designation of the API resource are communicated through the opName, the operation parameters must present any arguments that are needed to designate a specific instance of the resource to be operated upon.

For a list of available API operations and parameter specifications, see About the REST API Operations, on page 16.

#### Operations Data Parameter Syntax

The following table shows examples of operations data parameter syntax in JSON format.

<table>
<thead>
<tr>
<th>If the operation needs the following parameters (opData)</th>
<th>How to represent in JSON</th>
</tr>
</thead>
<tbody>
<tr>
<td>No parameters</td>
<td>{}</td>
</tr>
<tr>
<td>One parameter; integer (for example, 10)</td>
<td>{param0:10}</td>
</tr>
<tr>
<td>One parameter: string (for example, cloud)</td>
<td>{param0:&quot;cloud&quot;}</td>
</tr>
<tr>
<td>Two parameters: a string and an Integer</td>
<td>{param0:&quot;cloud&quot;,param1:10}</td>
</tr>
<tr>
<td>Two parameters: a string with null value and an Integer</td>
<td>{param0:null,param1:10}</td>
</tr>
<tr>
<td>Three parameters</td>
<td>{param0:&quot;cloud&quot;,param1:&quot;cloupia&quot;,param2:100}</td>
</tr>
</tbody>
</table>

#### Operation Data Parameters

...&opData={param0:"datacenter",param1:"DataCenter1",param2:"STORAGE-ACCOUNTS-T51"

...&opData= {param0:"Create NFS Datastore",param1:{"list":[{"name":"Volume Size","value":100},{"name":"Select Group","value":14},{"name":"Select vDC","value":18}]},param2:212}

- **param0**—Name of the workflow being invoked through the REST API.
- **param1**—Input being passed to the workflow. If there are more than one input, separate the inputs by comma and within the curly braces with proper quotations. If there are no inputs, use null for the API invocation.
- **param2**—If this workflow is being invoked as a child workflow of another service request, use the service request SR ID. If this workflow is not invoked as a child workflow, use -1. When -1 is used, a new service request will be invoked.
provides many complete API requests, formatted as URLs and ready for you to cut and paste into a browser. See Enabling the Developer Menu Options, on page 8.

**Context Parameters**

In the example above, Param0 is used to specify the UCS Director context. The context data value refers to one of the major domains managed by, for example, “global-services”, “vm”, “vdc”, “datacenter”, “storage_accounts”, “Compute-chassis”, “network-device”. A list of the standard UCS Director contexts appears in API Request Context Parameters, on page 53.

**Report Parameters**

The report parameter value is always the reportId. Typical reportIds include “STORAGE-ACCOUNTS-T51”, “CPU-S0”, “VOLUMES--X1”, “NETWORK-USAGE-H0”, “PORT-SUMMARY-V50”, “PRIVATE-CLOUD-FREE-STOREAGE-S1”. The reportId is typically the last parameter listed in an API request for a report. So, if the context is specified by two parameters, the report parameter is often the third, param2. For an extensive list of report names, and reportIds, categorized by context, see List of Available Reports, on page 73.

**Sample API Request 1**

The operation that requests a Login profile refers to the logged in user, so there is no need for a parameter. Most other operations need multiple arguments.

http://10.10.1.153/app/api/rest?formatType=json&opName=userAPIGetMyLoginProfile&opData={}

Response to Sample API Request 1

```
{  "serviceResult":{"userId":"jsmith","firstName":"John","lastName":"Smith","email":"jsmith@example.com",  "groupName":"Eng Group","role":"Regular"},  "serviceError":null,  "serviceName":"InfraMgr",  "opName":"userAPIGetMyLoginProfile" }
```

**Sample API Request 2**

In this request for a report about chassis for a data center, the operation requires three parameters, which is typical for a report request.

http://172.99.999.142/app/api/rest?opName=userAPIGetTabularReport&opData={param0:“datacenter”,  param1:“datacenter”,param2:“UCS-CHASSIS-T50”}

Response to Sample API Request 2

```
```
"Serial_Number":"1557","Model":"N20-C6508","Power_State":"ok",
"Operation_State":"operable",
"Configuration_State":"unsupported-connectivity","License_State":"license-ok",
"Servers":6,"IO_Modules":2,
"PSUs":4,"Fan_Modules":8,"Vendor":"Cisco Systems Inc"},
{"ID":"real108;sys/chassis-1","Account_Name":"real108",
"DN":"sys/chassis-1","Serial_Number":"FOX1352GDX4","Model":"N20-C6508",
"Power_State":"redundancy-failed",
"Operation_State":"power-problem","Configuration_State":"ok",
"License_State":"license-ok","Servers":7,
"IO_Modules":2,"PSUs":4,"Fan_Modules":8,"Vendor":"Cisco Systems Inc"},
"columnMetaData":null,"serviceError":null,"serviceName":"InfraMgr",
"opName":"userAPIGetTabularReport"}}

Tip

For advanced API users, the code in the Report Metadata request for the data center's UCS-CHASSIS-T50 report gave the first parameter as `param0: "23"`. In the request used in Sample API Request 2, the context "datacenter" was substituted for the value "23" and the request was successful. By comparing the API documentation against the Report Metadata and , you can sometimes discover alpha string value substitutes for the numeral string values (representing contexts) that appear in the Report Metadata requests.

Response Format

The following HTTP status codes are returned by:

• **401 Unauthorized**—The API key is not a valid key.

• **200 OK**—has processed the request. The actual status of the request is in the body of the response.

The response body is in JSON format as determined by the FormatType parameter specified in the API request.
## Components of an API Response

<table>
<thead>
<tr>
<th>API Response Component</th>
<th>Description</th>
<th>Component Example (Success Scenario)</th>
</tr>
</thead>
<tbody>
<tr>
<td>serviceResult</td>
<td>If the request succeeds, this result contains a specified set of name-value pairs or a JSON object or a report.</td>
<td>&quot;serviceResult&quot;: {&quot;userId&quot;:&quot;jsmith&quot;,&quot;firstName&quot;:&quot;John&quot;,&quot;lastName&quot;:&quot;Smith&quot;,&quot;email&quot;:&quot;<a href="mailto:jsmith@example.com">jsmith@example.com</a>&quot;,&quot;groupName&quot;:&quot;Eng Group&quot;,&quot;role&quot;:&quot;Regular&quot;}</td>
</tr>
<tr>
<td>serviceError</td>
<td>If the request succeeds, the serviceError is set to null. If the operation fails, the serviceError contains the actual error message.</td>
<td>&quot;serviceError&quot;:null</td>
</tr>
<tr>
<td>serviceName</td>
<td>Name of the back end service. Often set to InfraMgr, for example.</td>
<td>&quot;serviceName&quot;:&quot;InfraMgr&quot;</td>
</tr>
<tr>
<td>opName</td>
<td>Name of the operation provided in the request.</td>
<td>&quot;opName&quot;:&quot;userAPIGetMyLoginProfile&quot;</td>
</tr>
</tbody>
</table>

### Example: API Response in a Success Scenario

```
{"serviceResult":{"userId":"jsmith","firstName":"John","lastName":"Smith","email":"jsmith@example.com","groupName":"Eng Group","role":"Regular"}, "serviceError":null, "serviceName":"InfraMgr", "opName":"userAPIGetMyLoginProfile"}
```

### Example: API Response in a Failure Scenario

```
{"serviceResponse":null, "serviceError":"SERVICE_CALL_EXCEPTION: Service InfraMgr does not support operation test", "serviceName":"InfraMgr", "opName":"test"}
```

### API Response (Service Result) Data Types

The service result (payload) sent in a response to a REST API request is specified for the operation. The service result can be an operation-specific set of name-value pairs, or it can be formatted as a standard data type for this API, that is, as a report or a JSON object.

To see examples of the different report types, see Reports and JSON Object Response Samples, on page 62.

For information about the most commonly used report formats and their contents, see About Reports, on page 61.

For a list of available reports and the contexts with which they are associated, see List of Available Reports, on page 73.

For samples of JSON Objects, see JSON Object Parameter Types, on page 57.
API Operations

This chapter contains the following sections:

- About the REST API Operations, page 16
- Login Operations, page 16
- User Account Operations, page 17
- Report Operations, page 20
- Approval Operations, page 22
- Catalog Operations, page 23
- Chargeback Operations, page 24
- Funds Operations, page 25
- Group Operations, page 25
- Inventory (Cloud) Operations, page 26
- LOV Provider Operations, page 27
- Payment Status Operations, page 28
- Resource Accounting and Limits, page 28
- Service Container Operations, page 30
- Service Request Operations, page 34
- Task Operations, page 38
- VDC Operations, page 39
- VM Operations, page 40
- Workflow Operations, page 50
About the REST API Operations

The catalog of REST API operations provided in this section can help you determine which operations serve your needs, and how to work with each operation. You can find examples of the request and response values for an API operation through the Report Metadata and REST API Browser.

**Note**

The operations performed using the POST method are used primarily for services and provisioning.

**Note**

The opData of the API request URL, includes the following JSON parameters (the arguments associated with the operation):

- **param0**—Name of the workflow being invoked through the REST API.
- **param1**—Input being passed to the workflow. If there are more than one input, separate the inputs by comma and within the curly braces with proper quotations. If there are no inputs, use null for the API invocation.
- **param2**—If this workflow is being invoked as a child workflow of another service request, use the service request SR ID. If this workflow is not invoked as a child workflow, use -1. When -1 is used, a new service request will be invoked.

Login Operations

**userAPIGetMyLoginProfile**

**Description**

Returns information about the logged-in user.

**Parameters**

None.

**Return Value Type**

APILoginProfile

**Accessible**

Administrator/end user

**userAPIGetUserLoginProfile**

**Description**

Returns user information for the given user ID.
Parameters

String userId

Return Value Type

APILoginReport

Accessible

Administrator/end user

---

See also User Account Operations, on page 17, which include operations for adding users, onboarding, managing passwords, and profiles.

---

User Account Operations

userAPIAddUser

Description

Adds a user with the provided information (for example, user ID, password, email).

Parameters

• String userId
• String password
• String firstName
• String lastName
• String email
• String role
• String groupName

Return Value Type

boolean (true when successful)

Accessible

Administrator
**userAPIOnBoarding**

**Description**
Creates user, group and VDC with the details provided in the APIUserOnBoardDetails argument.

**Parameters**
- APIUserOnBoardParams inParams
  For an example of this JSON object, see JSON Object Parameter Types, on page 57.

**Return Value Type**
- APIUserOnBoardDetails
  For an example of this JSON object, see JSON Object Parameter Types, on page 57.

**Accessible**
- Administrator/end user

**userAPIGetUserLoginProfile**

**Description**
Returns user information for the given userID.

**Parameters**
- String userId

**Return Value Type**
- APILoginReport

**Accessible**
- Administrator/end user

**userAPIDeleteUser**

**Description**
Deletes the user with the given user ID.

**Parameters**
- String userId

**Return Value Type**
- boolean (true when successful)

**Accessible**
- Administrator
userAPIResetMyPassword

Description
Resets the password of the user account to the new password that is provided in the request.

Parameters
String newPassword

Return Value Type
boolean (true when successful)

Accessible
Administrator/end user

userAPIResetUserPassword

Description
Resets the password of a user with the userID and newPassword provided.

Parameters
- String userID
- String newPassword
- boolean restAPKey

Note
If the restAPKey is set to true, resets the REST API Key in addition to resetting the password. If set to false, only the password will be reset, and the REST API key remains unchanged for the given user. The user does not have to do anything if the restAPKey is set to true. You must decide whether to reset the REST API key when the password is reset.

Return Value Type
boolean (true when successful)

Accessible
Administrator

userAPIVerifyUser

Description
Authenticates the user with the given password.
Report Operations

userAPIGetAvailableReports

Description

Returns the available reports for a given context.

Parameters

• String contextName
• String contextValue

Return Value Type

List

Accessible

Administrator/end user

userAPIGetTabularReports

Description

Returns a tabular report for a given context and report ID.
Parameters

- String contextName
- String contextValue
- String reportId

Return Value Type

APITabularReport

Accessible

Administrator/end user

userAPIGetHistoricalReport

Description

Returns a tabular report for a given context, report ID, and duration.

Parameters

- String contextName
- String contextValue
- String reportId
- String durationName

Return Value Type

APIHistoricalReport

Accessible

Administrator/end user

userAPIGetInstantDataReport

Description

Returns a snapshot report for a given context and report ID.

Parameters

- String contextName
- String contextValue
- String reportId
Approval Operations

userAPIGetMyApprovalList

Description
Returns the approvals list for the logged-in user.

Parameters
None.

Return Value Type
APITabularReport

Accessible
Administrator/end user
userAPIUpdateMyApproval

Description

Updates the approval status of the current user, using the provided data.

Parameters

• int requestId
• int entryId
• boolean isApproved
• String comments

Return Value Type

boolean (true when successful)

Accessible

Administrator/end user

Catalog Operations

userAPICreateCatalogItem

Description

Creates a catalog item with characteristics defined by the provided data.

Parameters

APICatalogItem item

For an example of this JSON object, see JSON Object Parameter Types, on page 57.

Return Value Type

boolean (true when successful)

Accessible

Administrator

userAPIGetAllCatalogs

Description

Returns all catalog reports.

Parameters

None.
userAPIGetCatalogsPerGroup

Description
Returns the catalogs that are assigned to a given group.

Parameters
String groupName

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetAllCatalogs

Description
Returns all catalog reports.

Parameters
None.

Return Value Type
APITabularReport

Accessible
Administrator/end user

Chargeback Operations

userAPIChargebackDetails

Description
Returns the chargeback details for the logged-in user group.
API Operations

Funds Operations

userAPICheckFunds

Description

Returns the available customer’s funds.

Parameters

String userID

Return Value Type

Double (available funds)

Accessible

Administrator/end user

Note

See also Payment Status Operations, on page 28.

Group Operations

userAPIAddGroup

Description

Adds a group with the specified data (group name, description, names, email).
Parameters

- String groupName
- String description
- String firstName
- String lastName
- String contactEmail

Return Value Type

boolean (true when successful)

Accessible

Administrator

Note

Many operations are associated with a group value, such as userAPIGetCatalogsPerGroup. For more information, see the main operation category.

Inventory (Cloud) Operations

userAPIRequestInventoryCollection

Description

Triggers the inventory collection for the specified cloud.

Parameters

String cloudName

Return Value Type

boolean (true when successful)

Accessible

Administrator/end user
LOV Provider Operations

userAPIgetStaticListByName

Description
Returns the elements of a list.

Parameters
Name of the List

Return Value Type
FormLOVPair[]

Accessible
Administrator/End user

userAPIgetBMAOSList

Description
Returns the list of Cisco UCS Director Baremetal Agent OS names.

Parameters
None.

Return Value Type
FormLOVPair[]

Accessible
Administrator/End user

userAPIGetLOVProvidersList

Description
Returns the names of the available lists within the system.

Parameters
None.

Return Value Type
List<String>

Accessible
Administrator/End user
Payment Status Operations

userAPIUpdatePaymentStatus

Description
Updates the payment status with amount and timestamp.

Parameters
APIMakePaymentParams inParams
For an example of this JSON object, see JSON Object Parameter Types, on page 57.

Return Value Type
boolean (true when successful)

Accessible
Administrator/end user

Note
See also Funds Operations, on page 25.

Resource Accounting and Limits

userAPIGetResourceAccounting

Description
Returns the resource usage for the logged-in user group.

Parameters
None.

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetResourceAccountingDetails

Description
Returns the resource usage details for the logged-in user group.
Parameters
None.

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetResourceLimits
Description
Returns the resource limits for a requested group.

Parameters
String groupName

Return Value Type
APITabularReport

Accessible
Administrator

userAPIGetResourceLimitsForMyGroup
Description
Returns the resource limits for the logged-in group.

Parameters
None.

Return Value Type
APITabularReport

Accessible
Administrator/end user
Service Container Operations

**userAPIGetApplicationContainerTemplateDetails**

**Description**
Returns the details of Application Container template that is used for creating a service container.

**Parameters**
- applicationContainerTemplateName—Name of the template used for the application container.

**Return Value Type**
APITabularReport

**Accessible**
Administrator/End user

**userAPICreateServiceContainer**

**Description**
Creates a service container and returns the service request SR ID as an integer value.

**Parameters**
- groupName—Name of the group to which the user belongs and for which the container provisioning permission is allowed.
- catalogName—Name of the catalog that includes the application container template.
- serviceContainerName—Name of the service container to be created.
- Comments—Any comments for the provisioning operation.

**Return Value Type**
Integer

**Accessible**
Administrator/End user

**userAPIGetVNCURL**

**Description**
Returns the VNC URL which is used for verifying if VNC is up and running.

**Parameters**
- vmId—ID of the virtual machine.
Return Value Type
String

Accessible
Administrator/End user

userAPIGetAllServiceContainers
Description
Returns all service containers.

Parameters
None

Return Value Type
List of Service container

Accessible
Administrator/End user

userAPIGetServiceContainerData
Description
Returns the service container data.

Parameters
Service container id—ID of the service container.

Return Value Type
ContainerDataObjects

Accessible
Administrator/End user

userAPIGetServiceContainerDetails
Description
Returns the service container details such as network summary, port mapping, virtual machine information, event history, and so on.

Parameters
containerName—Name of the service container for which you need to view the details.
**userAPIGetServiceContainerVirtualInfraPolicy**

**Description**
Returns the infra policy details.

**Parameters**
infrapolicy name — Name of the infra policy for which you need to view the details.

**Return Value Type**
list

**Accessible**
Administrator/End user

**userAPIAddVMsServiceContainer**

**Description**
Adds the virtual machines (VMs) to a service container.

**Parameters**

- containerName — Name of the service container in which virtual machines can be added.
- ContainerVirtualMachine[] — An array of container VMs that you want to provision in the service container. You need to pass the VM parameters. Quantity and AppName are the mandatory VM parameters, where AppName is the VM name.

**Return Value Type**
Integer (Service request ID)

**Accessible**
Administrator/End user
userAPIPowerOnServiceContainer

**Description**

Turns on all the virtual machines (VMs) in a service container, one by one. Displays the service container in different colors based on VMs condition as follows:

- Blue—In the process of turning on the VMs.
- Orange—All VMs are powered on and gateway (GW) VM is down.
- Red—All VMs are powered off and GW VM is down.
- Green—All VMs are powered on and GW VM is up.

**Parameters**

containerName—Name of the service container to be powered on.

**Return Value Type**

boolean

**Accessible**

Administrator/End user

userAPIPowerOffServiceContainer

**Description**

Turns off all the VMs in the service container. When all the VMs are turned off and GW VM is down, the container is displayed in red.

**Parameters**

containerName—Name of the service container to be powered off.

**Return Value Type**

Boolean

**Accessible**

Administrator/End user

userAPIDeleteServiceContainer

**Description**

Deletes a service container.

**Parameters**

containerName—Name of the service container to be deleted.
userAPICloneServiceContainer

Description

Creates a new service container based on the source service container.

Parameters

- sourceContainerName—Name of the service container to be cloned.
- destinationContainerName—Name of the new service container.

Return Value Type

Integer (Service request ID)

Accessible

Administrator/End user

Service Request Operations

userAPISubmitServiceRequest

Description

Submits a service request for provisioning VMs. Supports Qty 1.

Parameters

- String catalogName
- String vdcName
- int durationHours
- int qty
- String comments
- beginTime

Return Value Type

Integer (Service Request Id)
Accessible
Administrator/end user

userAPIGetServiceRequests

Description
Returns all service requests for the user group.

Parameters
None.

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetServiceRequestDetails

Description
Returns service request details.

Parameters
int requestId

Return Value Type
APIServiceRequestDetails

Accessible
Administrator/end user

userAPICancelServiceRequest

Description
Cancels a service request in progress.

Parameters
int requestId

Return Value Type
boolean
userAPIGetServiceRequestLogEntries

Description

Returns the log entries of a service request for the requested severity:

- 0 — Debug
- 1 — Info
- 2 — Warning
- 3 — Error

Parameters

- int srId
- int severity (0 to 3)

Return Value Type

ServiceRequestLogEntry[]
userAPIGetServiceRequestWorkFlow

Description

Returns service request workflow details.

Parameters

int requestId

Return Value Type

APIWorkFlowStatus

The values set for the different execution status of a workflow are:

- EXECUTION_STATUS_NOT_STARTED = 0
- EXECUTION_STATUS_IN_PROGRESS = 1
- EXECUTION_STATUS_FAILED = 2
- EXECUTION_STATUS_COMPLETED = 3
- EXECUTION_STATUS_COMPLETED_WITH_WARNING = 4
- EXECUTION_STATUS_CANCELLED = 5

For an example of this report, see Reports and JSON Object Response Samples, on page 62.

userAPISubmitVAppServiceRequest

Description

Submits a service request with the virtual application catalog type and arguments.

Parameters

- String catalogName
- APINameValueList list

Return Value Type

int (service request ID)

Accessible

Administrator/end user

userAPIGetServiceRequestWorkFlow

Description

Returns service request workflow details.

Parameters

int requestId

Return Value Type

APIWorkFlowStatus

The values set for the different execution status of a workflow are:

- EXECUTION_STATUS_NOT_STARTED = 0
- EXECUTION_STATUS_IN_PROGRESS = 1
- EXECUTION_STATUS_FAILED = 2
- EXECUTION_STATUS_COMPLETED = 3
- EXECUTION_STATUS_COMPLETED_WITH_WARNING = 4
- EXECUTION_STATUS_CANCELLED = 5

For an example of this report, see Reports and JSON Object Response Samples, on page 62.

Accessible

Administrator/end user

userAPISubmitVAppServiceRequest

Description

Submits a service request with the virtual application catalog type and arguments.

Parameters

- String catalogName
- APINameValueList list

Return Value Type

int (service request ID)

Accessible

Administrator/end user
userAPIGetVMsForServiceRequest

Description
Returns VMs that are currently associated with the specified service request.

Parameters
int requestId

Return Value Type
APIVMList
For an example of this report, see Reports and JSON Object Response Samples, on page 62.

Accessible
Administrator/end user

userAPISubmitWorkflowServiceRequest

Description
Submits a service request with a workflow. Returns the ID of the service request.

Parameters
• String workflowName
• APINameValueList list
• int parentSRID

Return Value Type
int (service request ID)

Accessible
Administrator/end user

Note
For more information on operations related to service requests, such as userAPIGetServiceRequestWorkflow, see Workflow Operations, on page 50.

Task Operations

You can find information about the different API operations for tasks in the REST API Browser. For more information, see Using the REST API Browser, on page 8.
VDC Operations

userAPIGetAllVDCs

Description
Returns all vDCs (virtual data centers) for the logged-in user group. No parameters are required.

Parameters
None.

Return Value Type
APITabularReport
For more information about this report, see Tabular Reports, on page 71.

Accessible
Administrator/end user

userAPICreateVDC

Description
Creates a vDC (virtual data center) defined by the provided data.

Parameters
APIVDCDetails
For an example of this JSON object, see JSON Object Parameter Types, on page 57.

Return Value Type
boolean (true when successful)

Accessible
Administrator

Note
See also Workflow Operations, on page 50.

Note
See also userAPIOnboarding in User Account Operations, on page 17 and userAPISubmitServiceRequest in Service Request Operations, on page 34.
VM Operations

userAPIGetAllVMs

Description
Returns all VMs for the logged-in user. No parameters required.

Parameters
- int vmId
- int hostid

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetVMSummary

Description
Returns a summary of a specified VM.

Parameters
int vmId

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetVMsForServiceRequest

Description
Returns VMs that are currently associated with the specified service request.

Parameters
int requestId
Return Value Type
APIVMList
For an example report, see Reports and JSON Object Response Samples, on page 62.

Accessible
Administrator/end user

userAPIGetVMActionRequests

Description
Returns VM Action requests for a given context.

Parameters

• String contextName
• String contextValue

Return Value Type
APITabularReport

Accessible
Administrator/end user

userAPIGetAvailableVMActions

Description
Returns the available VM Actions for a given VM ID.

Parameters
int vmId

Return Value Type
List

Accessible
Administrator/end user

userAPIExecuteVMAction (for Generic VMs)

Description
Executes a specific Power Management Option action on a given generic VM.
Parameters

- int vmId
- String actionName—Values for actionName include the following:
  - powerOn
  - powerOff
  - suspend
  - shutdownGuest
  - standby
  - reset
  - reboot
  - rebuildServer
  - pause
  - resume
  - saveState
  - discardSaveState
  - repairVM

- String comments

Return Value Type

String (VM action request ID). Used to get the status of the request.

Accessible

Administrator/end user

userAPIExecuteVMAction (for VMware vSphere VMs)

Description

Executes a specific Power Management Option action on a given VMware vSphere VM.
Parameters
• int vmId

• String actionName—Values for actionName include the following:
  • vmStackView
  • accessVMCredentials
  • launchVMClient
  • assignVMToGroup
  • configureLeaseTime
  • reconfigureVM
  • powerOn
  • powerOff
  • deleteVM
  • suspend
  • shutdownGuest
  • standby
  • reset
  • reboot
  • createVMwareSnapshot
  • revertVMwareSnapshot
  • markVMwareSnapshot
  • deleteVMwareSnapshot
  • deleteAllVMwareSnapshot
  • resizeDisk
  • vmwareVMInventory
  • createVMDisk
  • deleteVMDisk
  • addVmvNic
  • deleteVmvNic
  • configureVmVNC
  • testVmVNCConnection
  • privateCloudVMClone
  • resynchVM
  • moveVMToVdc
• String comments

Return Value Type
String (VM action request ID). Used to get the status of the request.

Accessible
Administrator/end user

userAPIExecuteVMAction (for Microsoft Hyper-V VMs)

Description
Executes a specific Power Management Option action on a given Microsoft Hyper-V VM.
Parameters

- int vmId
- String actionName—Values for actionName include the following:
  - assignVMToGroup
  - configureLeaseTime
  - vmStackView
  - accessVMCredentials
  - launchVMClient
  - reconfigureHyperVVM
  - powerOn
  - powerOff
  - pause
  - resume
  - createHyperVSnapshot
  - vmwareVMInventory
  - saveState
  - discardSaveState
  - shutdownGuest
  - addHyperVvNic
  - deleteHyperVvNic
  - hypervResizeDisk
  - deleteHyperVSnapshot
  - deleteAllHyperVSnapshot
  - markHyperVSnapshot
  - restoreHyperVSnapshot
  - repairVM
  - deleteVM
  - removeHyperVMDisk
  - addHyperVMDisk

- String comments

Return Value Type

String (VM action request ID). Used to get the status of the request.
Accessible
Administrator/end user

userAPIReconfigureVM
Description
Resizes the specified VM.
Parameters
• int vmId
• int memorySizeInMb
• int numVCPUS—The number of virtual CPUs for a virtual machine
• String comments

Return Value Type
String
Accessible
Administrator/end user

userAPIGetVMActionStatus
Description
Returns the VM Action Status for a given VM Action Request.
Parameters
String requestActionId

Return Value Type
APIVMActionStatus
Accessible
Administrator/end user

userAPISetVMProperties
Description
Assigns a user label to a VM.
Parameters

- int vmId
- String userLabel

Return Value Type

boolean (true when successful)

Accessible

Administrator/end user

userAPIGetVMAccessCredentials

Description

Returns VM access credentials.

Parameters

int vmId

Return Value Type

APIVMAccess

Accessible

Administrator/end user

userAPIGetVMSnapshotDetails

Description

Returns VM snapshot details.

Parameters

int vmId

Return Value Type

APITabularReport

Accessible

Administrator/end user/end user
**userAPICreateVMSnapshot**

**Description**

Creates a snapshot based on the parameters provided. The snapshot is a backup of existing data on VM. An end user can later restore to a snapshot in case of a VM failure.

**Parameters**

- int vmId
- String name
- String descr
- boolean isMemory—Set value to true to make a snapshot of memory
- boolean isQuiesce—Set value to true to quiesce file system

**Return Value Type**

String (VM action request ID)

**Accessible**

Administrator/end user

**userAPICheckContextActionStatus**

**Description**

Returns the status message details of the VM action.

**Parameters**

- statusId—The string ID value used to check the status from the database that is updated from the thread performing the VM action.

**Return Value Type**

String
Workflow Operations

userAPIImportWorkflows

Description
Imports the workflow into the system.

Parameters
APIWFExport export

Return Value Type
boolean (true when successful)

Accessible
Administrator/end user

userAPIExportWorkflows

Description
Exports the specified workflows.

Parameters
String workflowNames

Return Value Type
APICustomWorkflowDefinitionList

Accessible
Administrator/end user

userAPIRollbackWorkflow

Description
Rolls back the specified service request ID.

Parameters
int srId

Return Value Type
int (Service Request Id)

Accessible
Administrator
userAPIGetWorkflows

Description

Returns the workflows in a folder.

Parameters

String folderName

Return Value Type

CustomActionDefinition[]

Accessible

Administrator

userAPIGetWorkflowInputs

Description

Returns the inputs of a workflow

Parameters

String workflowName

Return Value Type

APINameValueList

Accessible

Administrator

userAPIValidateWorkFlow

Description

Validates the workflow and returns the result.

Parameters

String workflowName

Return Value Type

APIWFValidationResult

Accessible

Administrator
userAPISubmitWorkflowServiceRequest

Description
Submits a service request with a workflow. Returns the ID of the service request.

Parameters
- String workflowName
- APINameValueList list
- int parentSRID

Return Value Type
int (service request ID)

Accessible
Administrator/end user
API Request Context Parameters

REST API operations that require parameters typically require the context as a parameter. There are a few exceptions, notably the operations that pick the context from login information.

If you want to create an API request, you have two options for finding the correct context parameter value to use:

- Find the correct context name string in the list of standard contexts, and copy it into the JSON parameter specification in your API request.
- In , navigate to a report that represents the same report data that you want to request through the API. Find the REST API URL in Report Metadata and use the context parameter(s) that you find there.

Timesaver

If you find the URL code used to send a request in , you can use some or all of that API request data to create your own request.

Note

In some scenarios, you might want to use the English (human-readable) name string for the context value rather than the numeral string value that is provided in the Report Metadata listing of the REST API URL.

Context Field Names and Corresponding Parameter Names

In the listing below, the first element is the name of the field; the second, in quotation marks, is the context value that you should assign to the parameter representing the context. In most requests for reports, param0 provides the context. If another context parameter (param1) value is required, you can use the value provided for this parameter in the Report Metadata listing of the REST API URL.
Administrative Contexts

- `CONTEXT_TYPE_GLOBAL` = "global";
- `CONTEXT_TYPE_GLOBAL_ADMIN` = "global-admin";
- `CONTEXT_TYPE_GLOBAL_SERVICES` = "global-services";
- `CONTEXT_TYPE_CLOUD` = "cloud";
- `CONTEXT_TYPE_HOSTNODE` = "hostnode";
- `CONTEXT_TYPE_CLUSTER` = "cluster";

End User Contexts

- `CONTEXT_TYPE_GROUP` = "group";
- `CONTEXT_TYPE_VM` = "vm";
- `CONTEXT_TYPE_VDC` = "vdc";
- `CONTEXT_TYPE_SR` = "servicerequest";

Data Center Contexts

- `CONTEXT_TYPE_PHYSICAL_DATACENTER` = "datacenter";

NetApp Report Contexts

- `CONTEXT_TYPE_STORAGE_ACCOUNTS` = "storage_accounts";
- `CONTEXT_TYPE_STORAGE_FILERS` = "netapp_filer";
- `CONTEXT_TYPE_STORAGE_AGGREGATES` = "storage_aggregates";
- `CONTEXT_TYPE_STORAGE_VOLUMES` = "storage_volumes";
- `CONTEXT_TYPE_STORAGE_LUNS` = "luns";
- `CONTEXT_TYPE_STORAGE_VFLIERS` = "netapp_v_flier";

UCS Report Contexts

- `CONTEXT_TYPE_INFRA_COMPUTE_UCSM_ACCOUNT` = "ucsm";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_FABRIC_INTERCONNECT` = "compute_fbi";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_CHASSIS` = "compute_chassis";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_SERVER` = "compute_server";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_SERVICE_PROFILE` = "service_profile";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_PORT_CHANNEL` = "ucs_portchannel";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_ORGANIZATION` = "ucs_org";
- `CONTEXT_TYPE_INFRA_COMPUTE_UCS_SERVICE_PROFILE_TEMPLATE` = "ucs_service-profile-template";
API Request Parameters for Reports or JSON Objects

In addition to requesting specific data fields, operations may include request parameters that specify the response must be a type of report (identified by its reportId) or a JSON object identified by name. If you need to obtain a specific report or a given report format or a JSON object from your API request, that requirement may be useful for identifying the API operation and parameters you need to use in your request.

- To see which API operations return the data and format you need to provide, see About the REST API Operations, on page 16.
- To see which UCS Director contexts are associated with given report or report format, see List of Available Reports, on page 73.

If you need to process a JSON object, either as input to or output from an API operation, see JSON Object Parameter Types, on page 57.
CHAPTER 6

JSON Objects

This chapter contains the following sections:

- JSON Object Parameter Types, page 57
- JSON Example: APIVDCDetails, page 58
- JSON Example: APICatalogItem, page 58
- JSON Example: APIUserOnBoardParams, page 58
- JSON Example: APIUserOnBoardDetails, page 59
- JSON Example: APILoginProfile, page 59
- JSON Example: APIMakePaymentParams, page 59
- JSON Example: APIProvisionParams, page 59

JSON Object Parameter Types

JSON objects contain data in a consistent format that can be passed and programmatically consumed more easily than the data in report formats. JSON objects appear in both API requests and responses.

A JSON object is an unordered set of name/value pairs, so it tends to be self-explanatory, like XML, but it is less bulky.

**Note**

For examples of other data types that also carry large data payloads, see Reports and JSON Object Response Samples, on page 62.

Parameters for JSON objects are passed in the following format: `ParameterName:parameterValue`. A proper JSON object begins with a left brace `{` and ends with a right brace `}`. Each name in a pair is followed by a colon `:` and then the corresponding value. The name/value pairs are separated by commas.
JSON Example: APIVDCDetails

The following sample shows examples of valid name/value pairs for this JSON object.

```
"vdcName":"vDC with API",
"vdcDescription":null,
"cloudName":"VMware161",
"groupName":3,
"approver1":null,
"approver2":null,
"vdcSupportEmail":"name@company.com",
"vdcCustomerNotificationEmail":null,
"systemPolicy":"Policy for 161",
"slaPolicy":"Sales SLA Policy",
"computingPolicy":"Computing for QA",
"storagePolicy":"VMware 161 - Default Storage Policy",
"networkPolicy":"Default Network QA",
"costModel":"Default Cost Model",
"isLocked":false,
"isDeletable":false,
"isSelfServicePowerMgmt":false,
"isSelfServiceResize":false,
"isSelfServiceDeleteVM":false,
"isSelfServiceSnapshotMgmt":false,
"inactivityPeriodForDeletion":-1
```

JSON Example: APICatalogItem

The following table shows examples of valid name/value pairs for this JSON object.

```
"catalogItemId":-1,
"catalogItemName":"CATFOR API",
"catalogItemDescription":null,
"cloudName":"VMware161",
"imageId":"Linux-SJ-PROD-Template",
"groups":"QAgroup",
"isAppliedToAllGroups":false,
"supportEmail":"name@company.com",
"vdcCategoryId":1,
"appList":null,
"otherApps":null,
"os":-1,
"otherOS":null,
"templateUser":null,
"templatePassword":null,
"credentialOption":1
```

JSON Example: APIUserOnBoardParams

The following table shows examples of valid name/value pairs for this JSON object.

```
"firstName":"John",
"lastName":"Smith",
"userID":"jsmith",
"passWord":"test123",
"role":"GroupAdmin",
"contactEmail":"jsmith@company.com",
"companyName":"test",
"vdcProfileName":"VDC smith",
```
"vdcName":"myvdc",
"billFrequency":"",
"additionalInfo":"test"

**JSON Example: APIUserOnBoardDetails**

The following table shows examples of valid name/value pairs for this JSON object.

"groupId":"12"
"groupName":"test"
"vdcID":5
"vdcName":"myvdc"

**JSON Example: APILoginProfile**

The following table shows examples of valid name/value pairs for this JSON object.

"userId":"jsmith"
"firstName":"John"
"lastName":"Smith"
"email":"jsmith@company.com"
"groupName":"test"
"groupId":12
"role":"GroupAdmin"

**JSON Example: APIMakePaymentParams**

The following table shows examples of valid name/value pairs for this JSON object.

"userID":"jsmith"
"ordered":"123"
"amount":"1000"
"companyName":"Test"
"status":"success"
"timestamp":"1308647424609"

**JSON Example: APIProvisionParams**

The following table shows examples of valid name/value pairs for this JSON object.

"catalogName":"QA Catalog .161",
"vdcName":"QA vDC",
"userID":"SmithUser",
"durationHours":1,
"beginTime":0,
"quantity":1,
"memoryMB":512,
"cores":1,
"estimatedCost":1250,
"comments":"test",
"additionalInfo":"test"
About Reports

Reports tend to be in one of three fundamental report formats: Tabular, Historical, or Snapshot. This section includes extensive information about these three formats. This section also shows samples of the different report types, including specialized reports such as the VM report and the APIWorkFlowStatus report. see Reports and JSONObject Response Samples, on page 62.

provides dynamically updated lists of the reports available to you and graphic renderings of each type of report. For each different context, a different set of reports (each identified by a reportId) is available.

To create an API request for a specific report, you need to use the proper operation name and the following:

• The context of the report (for example, the values for param0 and param1 in a JSON formatted API request with three parameters)

• The reportId value (typically, the last JSON parameter listed in an API report request)

To get the most complete and current list of reports available for a context, use the userAPIGetAvailableReport operation.

For a list of standard contexts and the reports associated with them, see List of Available Reports, on page 73.
commonly generates context values that are specific to customer sites, including contexts that refer to dynamically changing clouds of virtual machines. Workflows also depend on specific customer set-up, so you will have to maintain and use your own workflow-related values. To view customer-specific values, you must generate the GetAvailableReport mentioned above, or obtain the context data from the Report Metadata associated with an existing report in.

For fundamental information about using context and reportId data to construct an API request, see Request Format, on page 10.

Reports and JSON Object Response Samples

In addition to the samples provided in this section, some of the JSON objects discussed in JSON Object Parameter Types, on page 57 can also be rendered into reports.

AvailableReports (a tabular report)

This very useful report returns a comprehensive list of the reports available for a specified context. It includes report ID, report label and report type.

The following is a sample of this report:

```
{ "serviceResult":
[{
"reportLabel":"Summary","reportId":"SUMMARY-V50","reportType":"tabular"},
{"reportLabel":"UCS Readiness","reportId":"UCS-READINESS-T50","reportType":"tabular"},
{"reportLabel":"Organizations","reportId":"ORGANIZATIONS-T50","reportType":"tabular"},
{"reportLabel":"Chassis Inventory","reportId":"CHASSIS-INVETORY-S50","reportType":"snapshot"},
{"reportLabel":"Server Inventory","reportId":"SERVER-INVETORY-S50","reportType":"snapshot"},
{"reportLabel":"Fabric Interconnect Inventory","reportId":"FABRIC-INTERCONNECT-INVETORY-S50","reportType":"snapshot"},
"reportType":"tabular"},
{"reportLabel":"Servers Associated vs Unassociated","reportId":"SERVERS-ASSOCIATED-VS-UNASSOCIATED-S50","reportType":"tabular"},
{"reportLabel":"Chassis","reportId":"CHASSIS-T50","reportType":"tabular"},
{"reportLabel":"Servers","reportId":"SERVERS-T50","reportType":"tabular"},
{"reportLabel":"Fabric Interconnects","reportId":"FABRIC-INTERCONNECTS-S50","reportType":"tabular"},
{"reportLabel":"Service Profiles","reportId":"SERVICE-PROFILES-T50","reportType":"tabular"},
{"reportLabel":"Events","reportId":"EVENTS-T50","reportType":"tabular"},
{"reportLabel":"VSANs","reportId":"VSANS-T50","reportType":"tabular"},
{"reportLabel":"VLANs","reportId":"VLANs-T50","reportType":"tabular"},
{"reportLabel":"Port Channels","reportId":"PORT-CHANNELS-T50","reportType":"tabular"},
{"reportLabel":"QOS System Class","reportId":"QOS-SYSTEM-CLASS-T50","reportType":"tabular"},
{"reportLabel":"Chassis Discovery Policy","reportId":"CHASSIS-DISCOVERY-POLICY-T50","reportType":"tabular"},
{"reportLabel":"Management IP Pool","reportId":"MANAGEMENT-IP-POOL-T50","reportType":"tabular"},
{"reportLabel":"Flow Control Policies","reportId":"FLOW-CONTROL-POLICIES-T50","reportType":"tabular"},
{"reportLabel":"Locales","reportId":"LOCALES-T50","reportType":"tabular"},
{"reportLabel":"Faults","reportId":"FAULTS-T50","reportType":"tabular"}]
,"serviceError":null, "serviceName":"InfraMgr", "opName":"userAPIGetAvailableReports" }
```

APIReportDefinitionList

This report provides an array of three name-value pairs: reportLabel, reportId, and reportType.
The following is a sample of the JSON Object Response for this report.

```json
[
  {
    "reportLabel": "Summary",
    "reportId": "SUMMARY-V1",
    "reportType": "tabular"
  },
  {
    "reportLabel": "Summary",
    "reportId": "SUMMARY-V0",
    "reportType": "tabular"
  },
  {
    "reportLabel": "Active VM Distribution By Cloud",
    "reportId": "ACTIVE-VM-DISTRIBUTION-BY-CLOUD-S0",
    "reportType": "snapshot"
  },
  {
    "reportLabel": "Trend: Storage Capacity, Used & Free",
    "reportId": "TREND-STORAGE-CAPACITY,-USED-&-FREE-H1",
    "reportType": "trend"
  }
]
```

**APITabularReport**

This report provides an array of rows that consist of name-value pairs of columns. The report ID can be picked from userAPIGetAvailableReports.

The following is a sample of this report.

```json
[
  {
    "VMId": 1,
    "Month": "October, 2010",
    "Active_VM_Hours": 231,
    "Inactive_VM_Hours": 160,
    "Active_VM_Cost_USD": 0,
    "Inactive_VM_Cost_USD": 0,
    "One_time_Cost_USD": 0,
    "Allocated_CPU_Cost_USD": 0,
    "Reserved_CPU_Cost_USD": 0,
    "Used_CPU_Cost_USD": 0,
    "Allocated_Memory_Cost_USD": 0,
    "Reserved_Memory_Cost_USD": 0,
    "Used_Memory_Cost_USD": 0,
    "Committed_Disk_Cost_USD": 0,
    "Uncommitted_Disk_Cost_USD": 0,
    "Total_Cost_USD": 0
  }
]
```

**APIHistoricalReport**

This report provides an array of series that consist of the parameter (legend) name and the values of data samples for a given duration. The valid values for the duration are hourly, daily, weekly, and monthly. The reportId must be picked from userAPIGetAvailableReports.

The following is a sample of this report.

```json
{"series": [
  {
    "paramName": "cpuCapacityGhz",
    "paramLabel": "CPU Capacity (GHz)",
    "values": [
      {
        "timestamp": "1285728870845",
        "min": 51.734405256,
        "max": 51.734405256,
        "avg": 51.734405256
      },
      {
        "timestamp": "1285732492006",
        "min": 51.734405256,
        "max": 51.734405256,
        "avg": 51.734405256
      },
      {
        "timestamp": "1285736120878",
        "min": 51.734405256,
        "max": 51.734405256,
        "avg": 51.734405256
      }
    ]
  }
]
APISnapshotReport

This report provides an array of categories that consist of name-value pairs of data samples. This report drills down through the data hierarchy. The reportId can be picked from userAPIGetAvailableReports.

The following is a sample of this report.

```json
{"categoryAxisName":null,
 "valueAxisName":"Active vs Inactive",
 "categories":{
  "categoryName":null,
  "nameValuePairs":{
   "name":"Active VMs",
   "value":"17"},
   "name":"Inactive VMs",
   "value":"51"}}
```

APILoginProfile

This report provides the user ID, first name, last name, email, group name, and role.

The following is a sample of the JSON Object Response for this report.

```json
"userId":"jsmith"
"firstName":"Smith"
"lastName":"John"
"email":"jsmith@test.com"
"groupName":"test"
"groupId":"12"
"role":"GroupAdmin"
```

userAPIGetVMSummary (tabular report)

This report provides a summary report in tabular format for a specified VM.

The following is a sample of this report.

```json
{"Overview_VM_ID":1,
 "Overview_Instance_Name":"My-Instance-120",
 "Overview_Status":"UNKNOWN (poweredOn)",
 "Overview_IP_Address":"10.10.1.120",
 "Overview_Hostname":"coud-vc",
 "Overview_Image_ID":"My-Instance-120",
 "Overview_Cloud_Name":"VMware Cloud A",
 "Overview_Cloud_Type":"VMWare",
 "Ownership_Group":"Eng Group",
 "Ownership_vDC":"Eng-SJ-Prd",
 "Ownership_Category":"Application Server",
 "Ownership_Service_Request_ID":"
 "Ownership_Label":"vCenter 120",
 "Ownership_Provisioned_Time":"
 "Ownership_Scheduled_Termination_Time":"
 "Overview_Host_Node":"10.10.1.200",
 "Network_Port_Group":"VM Network",
 "Network_VLAN_ID":"0",
 "Network_No_of_vNics":1,
 "Network_vNic_Mac_Address":"00:50:56:82:55:69",
 "Network_vNic_Device_Config_Id":4000",
 "Overview_Boot_Time":"Sep 25, 2010 18:54:23",
 "Overview_Config_Name":"vCenter-Server 120",
 "Overview_VM_Version":4",
 "Resources_Resource_Pool":"Resources",
```
### Resources Num Virtual CPUs
1

### Resources CPU Reserved MHz
2881

### Resources CPU Limit MHz
1

### Resources CPU Overhead Limit MHz
0

### Resources CPU Shares
4000

### Resources Memory MB
2056

### Resources Memory Reserved MB
2050

### Resources Memory Limit MB
0

### Resources Memory Overhead Limit MB
0

### Resources Memory Shares
2560

### Storage Total Provisioned GB
43.02

### Storage Committed GB
15.31

### Storage Uncommitted GB
27.71

### Storage Non shared GB
15.31

### Storage Data Store Names
storage2

### Storage VM Path
[storage2] VirtualCenter-Clone_Dec_09/VirtualCenter-Clone_Dec_09.vmx

### Guest Information Guest OS
Microsoft Windows Server 2003, Enterprise Edition (32-Bit)

### Guest Information Guest State
running

### Guest Information Tools Status
guestToolsRunning

### Guest Information Tools Version
532039

### Options Default PowerOff Type
hard

---

**userAPIGetServiceContainerDetails (tabular report)**

This report lists the service container details such as network summary, port mapping, virtual machine information, event history, and so on.

**Input**

```
/app/api/rest?formatType=json&opName=fenced:userAPIGetServiceContainerDetails&opData={param0:"ga"}
```

**Output**

```
{
  "serviceResult": {
    "rows": [
      {
        "Overview_ID": 19,
        "Overview_containerType": null,
        "Overview_containerName": "ga",
        "Overview_containerLabel": "",
        "Overview_containerState": 1,
        "Template_Name": "temp_asa",
        "Template_Group": "Default Group",
        "Template_CreatedTime": "Mar 20, 2014 03:29:57 UTC",
        "Template_LeasedTime": "",
        "Template_ServiceRequest": 193,
        "Template_Initiatedby": "admin",
        "Template_ServiceRequestStatus": "Complete",
        "Template_OrchestrationFlow": "Fenced Container Setup",
        "Policy_UserAction": null,
        "Policy_VirtualCompute": "VMware-82 - Default Computing Policy",
        "Policy_VirtualNetwork": "demo_akila",
        "Policy_VirtualStorage": "VMware-82 - Default Storage Policy",
        "Policy_VirtualSystem": "IT Sys",
        "Policy_CostModel": "",
        "vInfraPolicyInfo_PolicyName": "asa_pol",
        "vInfraPolicyInfo_vAccount": "VMware-82",
        "vInfraPolicyInfo_ContainerType": "Fenced Virtual",
        "NetworkSummary_1_NetworkName": "lan0",
        "NetworkSummary_1_vlanIDPool": "100-199",
        "NetworkSummary_1_NetworkIP": "10.10.0.0/16",
        "NetworkSummary_1_NetworkMask": "255.255.255.0",
        "NetworkSummary_1_GatewayIP": "10.10.0.1",
        "VMS_1_VMName": "asa_vm",
        "VMS_1_ipaddress": "11.10.0.6",
        "PortMapping_1_Protocol": 6,
        "PortMapping_1_MappedPort": 222,
        "PortMapping_1_RemoteIP": "10.10.0.4",
        "PortMapping_1_RemotePort": 222,
        "PortMapping_1_protocol": "0",
        "PortMapping_1_Network": "lan0",
        "PortMapping_1_srcAddress": "0.0.0.0/0",
        "PortMapping_1_DestAddress": "0.0.0.0/0",
        "PortMapping_1_SrcPortRange": "0-65535",
      }
    ]
  }
}
```

---

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userAPIGetAllVDCs (tabular report)

This report lists all virtual datacenters for the currently logged in user group. No parameters are required.

The following sample report lists the cloud, group, vDC, state, total number of VMs, number of active VMs, and Custom Categories for the user group.

```
[{
  "Cloud": "",
  "Group": "Default Group",
  "vDC": "Default vDC",
  "State": "Locked",
  "Total_VMs": 67,
  "Active_VMs": 17,
  "Custom_Categories": 0
},
{
  "Cloud": "VMware Cloud A",
  "Group": "Eng Group",
  "vDC": "Eng-SJ-Prd",
  "State": "Ok",
  "Total_VMs": 1,
  "Active_VMs": 0,
  "Custom_Categories": 0
},
{
  "Cloud": "VMware Cloud B",
  "Group": "Eng Group",
  "vDC": "Eng-SJ-161",
  "State": "Ok",
  "Total_VMs": 0,
  "Active_VMs": 0,
  "Custom_Categories": 0
},
{
  "Cloud": "VMware Cloud B",
  "Group": "Prod",
  "vDC": "checkign delete",
  "State": "Ok",
  "Total_VMs": 0,
  "Active_VMs": 0,
  "Custom_Categories": 0
}]
```

userAPIGetAllVMs (tabular report)

This report retrieves a report of all VMs for the logged in user and provides some management-level data about each VM.

The following is a sample of this report.

```
[{
  "Cloud": "VMware Cloud A",
  "VM_ID": 1,
  "VM_Label": ",
```

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APIVMAction: userAPIGetAvailableVMActions

This report lists the available VM Actions possible for a given VM-ID.

The following is a sample of this report.

```
[
  {"actionName":"reconfigure",
   "actionLabel":"Resize VM",
   "actionType":"reconfigure"},
  {"actionName":"powerOn",
   "actionLabel":"Power ON",
   "actionType":"vmAction"},
  {"actionName":"powerOff",
   "actionLabel":"Power OFF",
   "actionType":"vmAction"},
  {"actionName":"suspend",
   "actionLabel":"Suspend",
   "actionType":"vmAction"},
  {"actionName":"shutdownGuest",
   "actionLabel":"Shutdown Guest",
   "actionType":"vmAction"},
  {"actionName":"standby",
   "actionLabel":"Standby",
   "actionType":"vmAction"},
  {"actionName":"reset",
   "actionLabel":"Reset",
   "actionType":"vmAction"},
  {"actionName":"reboot",
   "actionLabel":"Reboot",
   "actionType":"vmAction"}
]
```

APIVMActionStatus

This status report provides advice about the specified request for action with respect to a VM, such as information about the ActionStatus for a given VMActionRequest.Request. You can request this report with userAPIGetVMActionStatus.

The following is a sample of this report.

```
{"vmId":476,
 "actionName":"powerOn",
"..."
```
"actionLabel":"Power ON",
"comment":"Powered ON through API",
"user":"admin",
"startTime":"Oct 19, 2010 15:54:08",
"endTime":"Oct 19, 2010 15:54:19",
"status":"Completed",
"message":""}

**APIVMList**

This report includes the cloud name, VM ID, instance ID, host name, IP address, image ID, power status, status message, and VM type.

The following is a sample of this report.

```json
{
  "serviceResult":
  {"rows":
  ["Cloud":"VMware-138","VM_ID":2,"User_Label":",""VM_Name":"SJ-02-Perf-vCenter05",
   "Host_Name":"WIN-0EVDFER007E","IP_Address":"172.29.109.138",
   "Image_Id":"SJ-02-Perf-vCenter05","Host_Node":"172.29.109.42","Power_Status":"ON",
   "Group_Name":"Default Group","vDC":"Default vDC","Category":"Discovered VM",
   "Guest_OS_Type":"Microsoft Windows Server 2008 R2 (64-bit)"
  ,"Cloud":"VMware-138","VM_ID":23,"User_Label":",""VM_Name":"CUCSD-4.1.0.0_FuncTest_Agent_2_Jatin",
   "Host_Name":"localhost.localdom","IP_Address":"172.29.109.209","Image_Id":"CUCSD-4.1.0.0_FuncTest_Agent_2_Jatin",
   "Host_Node":"172.29.109.32","Power_Status":"ON","Group_Name":"Default Group",
   "vDC":"Default vDC","Category":"Discovered VM","Provisioned_Time":","Scheduled_Termination_Time":","Last_Status_Update":"Nov 19, 2013 13:47:10 PST",
   "Guest_OS_Type":"CentOS 4/5/6 (64-bit)"
  ]
  ,"columnMetaData":null
  },"serviceError":null,"serviceName":"InfraMgr","opName":"userAPIGetTabularReport"
}
```

**APIServiceRequestDetails**

This report provides the request ID, request type, initiating user, group name, request time, comments, provision quantity, provision catalog, provision vDC name, and provision duration hours.

**APIWorkFlowStatus**

This report provides service request workflow details with workflow status updates. APIWorkFlowStatus has multiple parameters that are categorized by the workflow steps.

The following is a sample of this report.

```json
stepId: "Initiated by admin",
executionStatus: 3,
statusMessage: "",
handlerId: 4,
startedTime: -1,
completedTime: 1289962148379,
validTill: -1,
startAfter: -1

stepId: "Budget Watch",
executionStatus: 3,
statusMessage: "Budget check successful.",
handlerId: 8,
startedTime: -1,
completedTime: 1289962171550,
validTill: -1,
startAfter: -1
```
Using GetAvailableReports to Obtain ReportIds

If you need to request a report, the reportId is crucial. One way to get a reportId is to query the report's context with `userAPIGetAvailableReports`. This yields a tabular report that contains the reportId of every report available at the specified context level.

For example, to query all available reports available at the context level, use the `userAPIGetAvailableReports` operation and specify that you want the UCS Account Level Reports, as follows:

```
http://localhost:8080/app/api/rest?/formatType=json&opName=userAPIGetAvailableReports&opData={param0:"ucsm",param1:""}
```

Replace `localhost:8080` with the server IP.

Here is the API response:

```
{
    "serviceResult":{
        "reportLabel":"Summary","reportId": "SUMMARY-V50","reportType":"tabular"}]
```
The report shown above lists all of the reports in the context, providing each report ID and its report format. To get any particular report at the account context level, use the reportId from the API output above. For example, to query a chassis report at the account context level, call the `userAPIGetTabularReport` API, as follows:

```
http://localhost:8080/app/api/rest/?/formatType=json&opName=userAPIGetTabularReport&opData={param0:"ucsm",param1:"ucsm 57",param2:"CHASSIS-T50"}
```

The first through third parameters are the context, query value, and report ID; the `param1` query value is in the ID column in the following tabular report.

The following response is returned:

```
```

Similarly, you can query the available reports at each context by applying the `userAPIGetAvailableReports` API to other contexts. Then, using one of the reportIds returned in the response, you can request a specific report using the appropriate API operation and context data.
If you are missing a key piece of information necessary to create an API request for a report (the proper operation name to use in the API request, for example), you can probably fill in that information by referring to the List of Available Reports, on page 73. With two or more pieces of the crucial information (the reportId, the context, the type of report you want), the list may enable you to fill in the information necessary to construct the necessary request. Most reports are of three basic types, and three corresponding operations are used to request them.

### Tabular Reports

This type of report is either a vertical table (which can provide summary data) or a horizontal table of multiple rows and columns. Essentially, the tabular report is an array of rows consisting of name value pairs. You can get the reportIds for these reports returned as summary data by the operation userAPIGetAvailableReports. The reportIds are suffixed with -V or -T, for Vertical or Tabular (horizontal) respectively. Tabular reports and Tabular with Action reports are both considered Tabular reports, and you must request them with the userAPIGetTabularReport method.

**Tip**

Tabular Reports

If you are missing a key piece of information necessary to create an API request for a report (the proper operation name to use in the API request, for example), you can probably fill in that information by referring to the List of Available Reports, on page 73. With two or more pieces of the crucial information (the reportId, the context, the type of report you want), the list may enable you to fill in the information necessary to construct the necessary request. Most reports are of three basic types, and three corresponding operations are used to request them.

### Example of a Tabular Report

```json
{
  "serviceResult": {
    "rows": [
      {
        "ID": "ucsm 57;sys/chassis-1",
        "Account_Name": "ucsm 57",
        "DN": "sys/chassis-1",
        "Serial_Number": "1",
        "Model": "N20-C6508",
        "Power_State": "ok",
        "Operation_State": "operable",
        "Configuration_State": "ok",
        "License_State": "license-ok",
        "Servers": 4,
        "IO_Modules": 2,
        "PSUs": 4,
        "Fan_Modules": 8,
        "Vendor": "Cisco Systems Inc"
      },
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        "ID": "ucsm 57;sys/chassis-2",
        "Account_Name": "ucsm 57",
        "DN": "sys/chassis-2",
        "Serial_Number": "2",
        "Model": "N20-C6508",
        "Power_State": "ok",
        "Operation_State": "operable",
        "Configuration_State": "ok",
        "License_State": "license-ok",
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        "IO_Modules": 2,
        "PSUs": 4,
        "Fan_Modules": 8,
        "Vendor": "Cisco Systems Inc"
      }
    ],
    "columnMetaData": null,
    "serviceError": null
  }
}
```
Historical Reports

The historic report is also known as a trend report. You use this type of report to monitor trends such as the usage of a resource, or the occurrence of events, over time. Typical trend reports present information such as CPU or network usage, or "VM Additions & Deletions" over a given period of time. The response format, APITrendReport, is an array of series consisting of parameter (legend) names and the values of data samples for a given duration. The valid values for the duration are "hourly", "daily", "weekly" and "monthly". The reportId for this type of report is suffixed with -T.

Example of a Historical Report

```json
{"series": [{
  "paramName": "cpuCapacityGhz",
  "paramLabel": "CPU Capacity (GHz)",
  "values": [
    {"timestamp": 1285728870845, "min": 51.734405256, "max": 51.734405256, "avg": 51.734405256},
    {"timestamp": 1285732492006, "min": 51.734405256, "max": 51.734405256, "avg": 51.734405256},
    {"timestamp": 1285736120878, "min": 51.734405256, "max": 51.734405256, "avg": 51.734405256},
    {"timestamp": 1285739726401, "min": 51.734405256, "max": 51.734405256, "avg": 51.734405256}]
}]
```

Snapshot Reports

The snapshot report is an instant report about a resource at any given point in time. For example, the snapshot report of a VM's CPU usage provides the current CPU utilization value. The APISnapshotReport is an array of categories which consist of name-value pairs of data samples. Pie Chart and Bar Chart reports are considered Snapshot reports. You must request a Snapshot report with the userAPIGetInstantDataReport method. The reportId for this type of report is suffixed with -S.

Example of a Snapshot Report

```json
{"categoryAxisName": null,
"valueAxisName": "Active vs Inactive",
"categories": [
{"categoryName": "", "nameValuePairs": [
{"name": "Active VMs", "value": "17"},
{"name": "Inactive VMs", "value": "51"}
]}
]}
```
List of Available Reports

In the following table, reports are grouped by context. The same report (with the same report ID) may be used for different contexts, and so may appear in multiple locations in this list.

Note: Report IDs are always single strings without character spaces. Because some of these strings are very long, they are broken across multiple lines within individual table cells below. If you perform an electronic search for a full, exact report ID string, it may not return a result because the break inserts a character space; search instead for a short unique string contained within the full report ID character string.

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Using the List of Available Reports

If you know the context of the report you want to get, you can use the report type information in the following List of Available Reports, on page 73 to find the reportId to use in your request, and even to determine which operation you should use, if you are unsure. In many cases, you can use the List of Available Reports to construct an API request that fetches the report data you need.

Useful examples of reports, including VM and WorkFlowStatus reports, are provided elsewhere in the REST API documentation. See: Reports and JSON Object Response Samples, on page 62.

Note

If you require additional data for your API request, refer to the Report Metadata provided by. See Enabling the Developer Menu Options, on page 8.
Additional REST API Resources

This chapter contains the following sections:

- Creating and Testing API Request Code using XML or Java, page 91

Creating and Testing API Request Code using XML or Java

Before You Begin

To use this procedure, you must have the Enable Developer Menu option selected, and you must already have navigated to the REST API Browser tab so that the list of tasks appears. Refer to the procedure for accessing the REST API Browser, which is provided earlier in this section.

A window featuring three tabs should appear, with the API Examples tab open, showing some API data corresponding to your task selection. The HTTP Method and URL information should appear.

Procedure

Step 1 Open a task folder to display the API information, then double-click a row showing an API resource and operation that interests you.

If the operation and resource support the creation of new API requests, the API Examples tab will provide data entry boxes for the parameter values that you will be able to use to construct a successful request. If no data entry box appears, then you cannot enter data to create a new API request using this procedure. If the API Examples tab shows API data corresponding to and confirming your selection, and the HTTP Method and URL information appear, you can use the data provided.

Step 2 If a data entry box displays Select..., click it to open data search-filters and use them to sort out and select the data you need to enter.

Step 3 As necessary, define a new API request by providing the missing data (API request parameters) in the API Examples tab. Refer to the Details tab for useful information about parameters.

a) You can click Generate XML to see a sample of the request.

Step 4 Open the Details tab to see the API resource and operation name, and to see data formats and definitions for the request and the response data.

Step 5 To execute the API with the REST API Browser, click the Details tab, then click Submit.
You can also use the API Examples and Sample Java Code tabs to submit API examples and sample Java code.

**Step 6**
To see Java code that is equivalent to your REST API request code, open the Sample Java Code tab.

**What to Do Next**
Keep a copy of code used to submit a successful, useful API request, and use it in your application where appropriate.
About the Java API

This chapter contains the following sections:

- Java API Examples, page 93
- Java Example: userAPIGetMyLoginProfile, page 93
- Java Example: userAPIGetAllVDCs, page 94

Java API Examples

provides a Java API that provides most of the capabilities of the REST APIs. The source code and compiled classes are part of the SDK, which includes Javadocs.

To run the samples provided with the SDK, use ExampleClient.sh or ExampleClient.bat.

Automatically Generated Java API Code

The REST API Browser enables you to generate usable Java API code. The code integrates parameters based on your implementation of , and in most cases, it can be used immediately to perform API operations. For details, see Using the REST API Browser, on page 8.

Java Example: userAPIGetMyLoginProfile

The following sample shows snippets of code used by a Java Client.

ExampleClient.bat SERVER KEY userAPIGetMyLoginProfile

```java
{
   userId: "exampleUser",
   firstName: "John",
   lastName: "Doe",
   email: "exampleUser@acme.com",
   groupName: "exampleGroup",
   role: "Regular"
}
```
Java Example: userAPIGetAllVDCs

The following sample shows snippets of code used by a Java Client.

ExampleClient.bat  SERVER KEY  userAPIGetAllVDCs

```java
{ rows: [
{ Cloud: "", 
  Group: "Default Group",
  vDC: "Default vDC",
  State: "Locked",
  Total_VMs: 20,
  Active_VMs: 18,
  Custom_Categories: 0
},
{ Cloud: "Acme Private Cloud",
  Group: "exampleGroup",
  vDC: "exampleVDC",
  State: "Ok",
  Total_VMs: 10,
  Active_VMs: 9,
  Custom_Categories: 0
} ]
```
Cisco UCS Director REST API SDK Bundle

This appendix contains the following sections:

- About the Cisco UCS Director REST API SDK Bundle, page 95
- Importing the SDK Bundle Project into the Eclipse IDE, page 96

About the Cisco UCS Director REST API SDK Bundle

The Cisco UCS Director REST API SDK Bundle is part of the Cisco UCS Director REST API. In addition to documentation, such as development guides and a readme, the SDK Bundle provides examples that you can use with the REST API. These examples include test cases and sample code that demonstrate the use of the SDK classes.

The SDK Bundle is delivered in an archive file named ucsd-rest-api-sdk-v2.zip. This archive includes the following components designed to assist you in developing applications with the REST API.

Development Guides

The development guides are contained in the DevGuides folder. They include the Cisco UCS Director REST API Developer Guide and documentation about the test cases provided with the SDK Bundle.

REST API Javadocs

The Cisco UCS Director REST API Javadocs are contained in the docs folder. The Javadocs cover all classes provided with the SDK Bundle.

JAR file

The ucsd-rest-api-sdk-v2.0.jar file is contained in the lib folder. This file is the archive of all classes required for managing the Cisco UCS Director and other required libraries.

Example Test Cases and Sample Code

The example test cases and sample code are contained in the src folder. These tests cases and code demonstrate the usage of the SDK classes in the ucsd-rest-api-sdk-v2.jar file. The classes are available in the src\com\cisco\cuic\api\examples folder.
Readme
The Readme contains the lists of all components included in the SDK Bundle. It is available at the top level of the archive.

Rest-server.properties File
This file contains the properties used by the examples in the examples folder. It is available at the top level of the archive.

Project file
The .project file enables you to import the SDK Bundle into the Eclipse IDE. This file is required for development purposes. It is available at the top level of the archive.

Importing the SDK Bundle Project into the Eclipse IDE

Before You Begin
Obtain the SDK Bundle archive and extract the contents to an appropriate folder.

Procedure

Step 1 In the Eclipse IDE, choose File > New > Java Project. The Create a Java Project dialog box appears.
Step 2 In the Project Name field, enter a name for the project.
Step 3 Right click the project, and select Import. The Import dialog box appears.
Step 4 Select File System and click Next.
Step 5 Click Browse and navigate to the folder where you extracted the SDK Bundle.
Step 6 Click Finish. The Eclipse IDE displays the SDK Bundle project on the Project Explorer tab.