

HP Cloud Service Automation

For the Windows[®] and Linux operating systems

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API Quick Start

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Chapter 1: Introduction

Welcome to HP Cloud Service Automation (HP CSA) API Quick Start. HP CSA orchestrates the deployment of infrastructure compute resources and complex multi-tier application architectures. The *Cloud Service Management Console* provides for the overall administration and configuration of the Cloud Service Automation system. For application developers, HP CSA provides a REST (REpresentational State Transfer) Application Programming Interface (API) that allows you to interact programmatically with many of the capabilities that HP CSA offers through the *Cloud Service Management Console* and the *Marketplace Portal*.

This API Quick Start is designed to help you learn the API by introducing the HP CSA capabilities that can be accessed programmatically, how to access them, and walking through several examples. This guide assumes that you:

1. Understand how to use a RESTful API. See http://en.wikipedia.org/wiki/Representational_state_transfer for general REST information.
2. Have installed and set up HP Cloud Service Automation, following the instructions in the *HP Cloud Service Automation Installation Guide* and the *HP Cloud Service Automation Configuration Guide*.

Chapter 2: What is HP Cloud Service Automation?

HP Cloud Service Automation (HP CSA) is a unique platform that orchestrates the deployment of compute and infrastructure resources and of complex multi-tier application architectures. HP CSA integrates and leverages the strengths of several HP datacenter management and automation products, adding resource management, service offering design, and a customer portal to create a comprehensive service automation solution.

The HP CSA subscription, service design and resource utilization capabilities address three key challenges:

- The Marketplace Portal provides a customer interface for requesting new cloud services and for monitoring and managing existing services, with subscription pricing to meet your business requirements.
- The HP CSA graphical service design and content portability tools simplify developing, leveraging, and sharing an array of service offerings that can be tailored to your customers' needs.
- The HP CSA lifecycle framework and resource utilization features ease the complexity of mapping your cloud fulfillment infrastructure into reusable, automated resource offerings for on-time and on-budget delivery.

For further information about HP CSA concepts, see the *HP Cloud Service Automation Concepts Guide*. For information about the HP CSA management console, see the *HP Cloud Service Management Console Help*.

Chapter 3: HP Cloud Service Automation API Documentation Overview

CSA 4.10 exposes subscription, service and resource information through RESTful API calls. You can exercise all CSA RESTful API calls programmatically and from an HTTP client. You'll find more information on HTTP clients in ["Retrieving Information from HP CSA 4.10 using RESTful calls" on page 11](#).

Consumption API Overview

HP Cloud Service Automation 4.x introduced a set of RESTful API calls as well as a framework for describing, producing, consuming and exercising these RESTful services. In addition to providing reference API documentation, this content provides an interactive environment where you can exercise API calls and view the response from your server. This set of API calls is referred to as the **Consumption API**.

The API calls found in this interactive content can also be exercised programmatically or through a REST client.

Here's an example of content you'll see for a Consumption API call:

mpp-order : This API allows you place an order and manage existing orders.			
Show/Hide List Operations Expand Operations Raw			
GET	/mpp/mpp-order/{orderId}/attachment/file/{attachmentId}		Get service offering attachment file
DELETE	/mpp/mpp-order/{orderId}		Delete an Order
GET	/mpp/mpp-order/{orderId}		Read an order
POST	/mpp/mpp-order		This resource allows you place an order

You can click on any method listed to get detailed content for that call, and an interactive "Try it out!" feature. The detailed content provides developers quick and easy access to each API call's:

- Syntax
- Method (operation)
- Parameter descriptions
- Model and schema information
- Interactive "Try it out!" dialogs that let you submit calls to your server, see the results, and then understand how you need to construct REST URLs and any payloads.

Clicking on the DELETE method in the above example, displays the following:

mpp-order : This API allows you place an order and manage existing orders.

Show/Hide | List Operations | Expand Operations | Raw

GET /mpp/mpp-order/{orderId}/attachment/file/{attachmentId} [Get service offering attachment file](#)

DELETE /mpp/mpp-order/{orderId} [Delete an Order](#)

Parameters

Parameter	Value	Description	Parameter Type	Data Type
orderId	<input type="text" value="(required)"/>	ID of the order	path	string
X-Auth-Token	<input type="text"/>		header	string

Error Status Codes

HTTP Status Code	Reason
403	Authorization failure
404	Not found

[Try it out!](#)

GET /mpp/mpp-order/{orderId} [Read an order](#)

See ["Retrieving Information from HP CSA 4.10 using RESTful calls" on page 11](#) for more information on executing an API call from this interactive content.

Legacy API Overview

HP CSA continues to support the RESTful API introduced in the CSA 3.x releases. We'll refer to these calls as the **Legacy CSA 3.x API** or simply **Legacy API**. Though there is some overlap between the information available through this API and through the Consumption API, the Legacy API provides access to additional information not available through the Consumption API. The Legacy API calls are documented in the *HP Cloud Service Automation API Reference Guide*. This document includes information on each call's:

- URI syntax
- Method (operation)
- Parameter descriptions
- Examples are often included

Deciding which API to use

The likely question you have after reading the previous content is, "How do I determine which API to use?"

- In general, if the action you want to perform is possible using Consumption API (Marketplace Portal integration being a typical use case), you should use those calls as they provide access to the most current product functionality and information.
- If the action you want to perform is available only with the Legacy API, use those calls.

- And lastly, if you are working with an application developed using the Legacy API, and that application will not be modified to use the Consumption API, you will likely want to use the Legacy API as well. For example, if an application or several applications that work together, attempt to use a mix of Legacy and Consumption API calls to access service offering information, the content using the Legacy API might not have the same data fields available with the Consumption API, possibly causing problems when the data is compared or is used together.

Chapter 4: HP Cloud Service Automation APIs

Consumption API

The following public API calls provide access to HP CSA consumer data. These calls were introduced to the product in CSA 4.x, and are documented and can be exercised through a browser at: **`https://<host>:<port>/csa/apidocs.jsp`**, substituting the host and port information appropriate for your CSA environment. They can also be exercised programmatically or through an HTTP client. See ["Retrieving Information from HP CSA 4.10 using RESTful calls" on page 11](#) for more information on how to exercise HP CSA API calls.

API	Description
component-template	Manage service topology component templates
component-type	Manage service topology component types
constraint	View property constraints
deployment	Manage service topology deployments
mpp-approval	Manage approvals
mpp-category	View categories
mpp-instance	View service instance information
mpp-notification	View subscriptions and notifications
mpp-offering	View service offerings
mpp-order	Manage orders
mpp-organization	View organization information
mpp-property	View dynamic property's values
mpp-request	Manage service requests
mpp-subscription	Manage subscriptions
mpp-user	View user information
plugin	View plugin details
tag	Manage tags
/service/template	View service topology information
topology	Manage service topologies

Legacy CSA 3.x API

The following API calls are accessed programmatically or through an HTTP client. These calls are documented in the **HP CSA API Reference**. See ["HP Cloud Service Automation API Documentation Overview" on page 6](#) for introductory information. See ["Retrieving Information from HP CSA 4.10 using RESTful calls" on page 11](#) for detailed information on how to exercise HP CSA API calls.

API	Description
artifact	View, create and modify CSA artifacts
availablevalues	Retrieve the list of available values for a dynamic property
catalog	View, create and modify information related to CSA catalogs
export	Export supported artifact(s) as a content archive
import, import_result	Import supported artifact(s) from a content archive
lifecycle engine	View and schedule lifecycle actions
login	Provide credentials for CSA RESTful API calls
notification	View and send notifications
organization, orgInformation	View and modify organization information
process instance	View execution results from HP Operations Orchestration flows
search	Find specified information in CSA artifacts
user	View information related to CSA users
utilization	View resource utilization information for a subscription

Chapter 5: Retrieving Information from HP CSA

4.10 using RESTful calls

Let's look more closely now at the preparation for and execution of HP CSA RESTful API calls.

Communication with CSA

Solution developers communicate with CSA over http or https and parse the data structures returned by CSA. The default port for communication with CSA 4.10 is port 8444.

Consumption API data is returned in JSON format. Legacy API data can be returned in either XML or JSON format. You need to set the http headers `Content-Type:application/xml` or `application/json`, and `accept:application/xml` or `accept:application/json` as appropriate for the call you're making.

Authentication with an integration account

Authentication is handled using HTTP basic authentication. The authentication value is provided to Legacy API calls and to the Consumption *tokens* API call (as described in ["Authorization" on the next page](#)) via the Basic Authorization header.

When exercising an API call from an HTTP client or from the interactive API content, this Authorization header is automatically generated using the credentials you supply when you log into CSA as will be required to get permission to make RESTful calls.

When exercising an API call from your application's code, you must create the Authorization header. Supply the Base64 encoded value of the `<username>:<password>` string for the user you will use for authentication. The default credentials and authorization header for the Legacy and Consumption APIs are shown here:

API	Default Username: Password	Encoded Credentials and Authorization Header
Legacy	csaTransportUser: csaTransportUser	Base64 encoded user:password: Y3NhVHJhbnNwb3J0VXNlcjppjc2FUcmFuc3BvcnRVc2Vy
		Authorization header: Basic Y3NhVHJhbnNwb3J0VXNlcjppjc2FUcmFuc3BvcnRVc2Vy
Consumption	idmTransportUser: idmTransportUser	Base64 encoded user:password: aWRtVHJhbnNwb3J0VXNlcjppZG1UcmFuc3BvcnRVc2Vy
		Authorization header: Basic aWRtVHJhbnNwb3J0VXNlcjppZG1UcmFuc3BvcnRVc2Vy

See the "Change CSA Out-of-the-Box User Accounts" section in the *HP Cloud Service Automation Configuration Guide* for Windows® or for Linux for information on managing built-in user accounts.

Authorization

Legacy CSA 3.x API Authorization

With the exception of login and orgInformation, CSA Legacy API calls require a userIdentifier parameter, as well as a Basic Authorization header created using an integration account as described in ["Authentication with an integration account" on the previous page](#). Use the login API call to obtain a user's CSA ID for the userIdentifier parameter. The user must have the necessary permissions to access the data requested by the API calls you will be making

Error code 401 (Not authorized) will be returned if the same user is not specified for authorization and for authentication. The exception to this is when csaTransportUser is used for authentication as it is accepted for authorization on behalf of other users.

To get, for example, the user ID for user consumer in organization CSA_CONSUMER, submit the following URL (via an HTTP client or application code as will be described shortly):

```
https://<host>:<port>/csa/rest/login/CSA_CONSUMER/consumer
```

The <person><id> value in the following return body is the userIdentifier value you would use in further Legacy API calls:

```
<person>
  <id>BFA0DB53DA414B90E04059106D1A24B5</id>
  <isCriticalSystemObject>false</isCriticalSystemObject>
  <description>service consumer user</description>
  <detailedDescription>service consumer user</detailedDescription>
  <iconUrl>http://localhost/csaconsumer/consumer</iconUrl>
  <name>consumer</name>
  <displayName>consumer</displayName>
  <state>
    ...
  </state>
  ...
</person>
```

Consumption API Authorization

Consumption API calls require an IdM authentication token. This token must then be supplied to each API call in the X-Auth-Token HTTP header. An authentication token is retrieved from the Identity Management component as demonstrated below. The Basic Authorization header as described in ["Authentication with an integration account" on the previous page](#) will be used to retrieve this token. The token.id value returned in the response body is the token you need to include in the X-Auth-Token HTTP header.

URL	https://<host>:<port>idm-service/v2.0/tokens
-----	--

Method	POST
Parameters	None
Request Body	See example that follows
Response Body	See example that follows
Returns	200 - Success 400 - Improperly formatted request body (most common cause is missing Content-Type header) 403 – Authentication failure

Header	Value	Meaning
Accept	application/json	Output is in JSON format
Content-Type	application/json	Input message body is in JSON format
Authorization	Basic aWRtVHJhbnNwb3J0VXNlcjppZG1UcmFuc3BvcnRVc2Vy	Default authorization header as described in "Authentication with an integration account" on page 11

Example JSON Request Body:

```
{
  "passwordCredentials" : {
    "username" : "consumer",
    "password" : "cloud"
  },
  "tenantName" : "MPP"
}
```

Example JSON Response Body:

```
{"token" : {
  "id" : "ab48a9efdfedb23ty3494",
  "expires" : "2010-11-01T03:32:15-05:00",
  "tenant" : {
    "id" : "t1000",
    "name" : "MPP"
  }
},
"secondaryToken" : "1b07ae0018e34864b424a7ae0dd8e34",
```

```

"refreshToken" : "C/poRbpxftaqZZ12JJYrWd2a1huDwEZ",
"user" : {
  "id" : "u123",
  "name" : "consumer",
  "roles" : [ {
    "id" : "100",
    "name" : "ROLE_USER"      }, {
    "id": "101",
    "name": "object-store:admin",
    "tenantId": "t1000"
  } ]
}
}

```

Executing RESTful calls

CSA RESTful API calls can be exercised through an HTTP client as described in ["Retrieving Information from HP CSA 4.10 using RESTful calls" on page 11](#), or programmatically from an application. The Consumption API calls can also be exercised through the interactive content as explained in ["Exercising Consumption API calls using the interactive content" on page 16](#). Some calls have more strict permission requirements, administrator level permissions for example, so you will need to supply appropriate credentials.

The base URL for the Legacy API is **https://<host>:<port>/csa/rest**, which is appended with the specific URI for the API call. For example, to access the import API, you would use the URL: **https://<host>:<port>/csa/rest/import**, substituting the host and port information appropriate for your CSA environment.

The base URL for the Consumption API is **https://<host>:<port>/csa/api**, which is appended with the specific URI for the API call. For example, to access the mpp-offering API, you would use the URL: **https://<host>:<port>/csa/api/mpp-offering**, again, substituting the host and port information appropriate for your CSA environment.

Exercising API calls using an HTTP Client

Though you can issue RESTful calls through any typical HTTP client (browser), you'll likely find it more convenient to use a client designed especially for developers making RESTful calls. These are often referred to as *REST clients*. A REST client organizes the information you'll work with when making RESTful calls: headers, methods, request and response bodies, and so on. A REST client makes it easier to compose and submit requests to the CSA 4.10 RESTful service APIs, as well as for viewing server responses.

A number of REST clients are available. You can add, for example, the REST Console plug-in for Google™ Chrome as follows:

- Start Google Chrome.
- Open Chrome Web Store.

- Use search box to search for REST Console.
- Select Add to Chrome.

Example configuration of REST Console plug-in:

The screenshot shows the REST Console interface with three tabs: Options, Target, and Body. The Options tab is active, showing settings for General, Syntax Highlighting, and Color Theme. The Target tab is also visible, showing the Request URI, Request Method, and Request Timeout. The Body tab is active, showing Content Headers, Request Payload, and Custom Headers. Callouts provide additional context for several fields:

- Target URI:** "URL including host, port, and API path" (points to `https://1111.1111.8444/csa/rest/login/CSA-Provider/admin`).
- Request Method:** "Simple 'GET' call, no data" (points to the `GET` dropdown).
- Accept Content-Type:** "Request either `application/xml` or `application/json` data" (points to the `application/xml` checkbox).
- Content-Type:** "I will send data in `application/xml` type" (points to the `application/xml` checkbox).

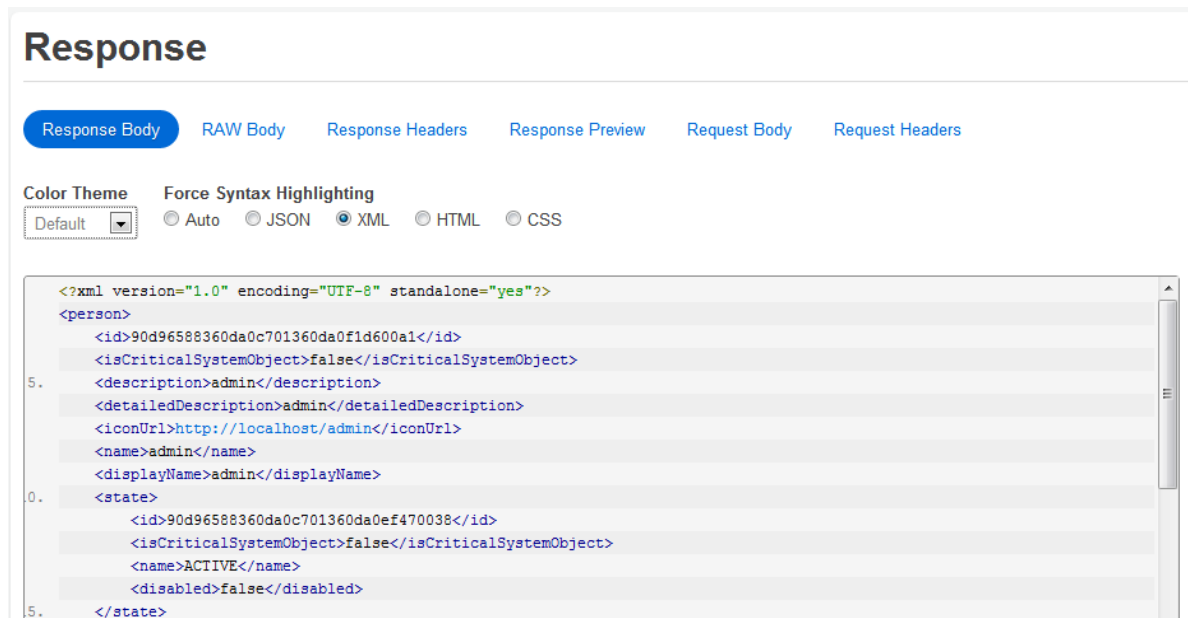
At the bottom of the Body tab, there are buttons for `Send`, `GET`, `POST`, `PUT`, and `DELETE`, along with `Reset` and `Save Defaults` buttons.

Configure the basic authorization in the Authorization tab using a username and password. See ["Authentication with an integration account" on page 11](#) for more information. This user must have privileges to access CSA's RESTful APIs.

Example REST Console authorization:

The screenshot shows the REST Console interface with the Authorization tab active. The Authorization Header is configured with the value `Basic YWRtaW46Y2xvdWVQ=`. There are buttons for `Basic Auth`, `Setup OAuth`, and `Refresh OAuth`.

If the plug-in is configured correctly, you will see output in the Response Body tab similar to the following when you issue a request.



Exercising Consumption API calls using the interactive content

In addition to being exercised programmatically or through an HTTP client, the Consumption API can be exercised through the “Try it out!” feature in the interactive API content. You will be prompted to login to the CSA Management Console to access this content. Basic authentication and authorization required to make RESTful calls will be configured as part of the login process.

This interactive content is presented in a web interface, and can be accessed at **https://<host>:<port>/csa/apidocs.jsp** from a browser, substituting the host and port information appropriate for your CSA environment.

The following is example content you'll see. The mpp-order call has been expanded in this example:

License : License management. (internal use only)		Show/Hide	List Operations	Expand Operations	Raw
mpp-property : The API for marketplace portal to read properties.					
		Show/Hide	List Operations	Expand Operations	Raw
mpp-order : This API allows you place an order and manage existing orders.					
		Show/Hide	List Operations	Expand Operations	Raw
DELETE	/mpp/mpp-order/{orderId}	Delete an Order			
GET	/mpp/mpp-order/{orderId}	Read an order			
GET	/mpp/mpp-order/{orderId}/attachment/file/{attachmentId}	Get service offering attachment file			
POST	/mpp/mpp-order	This resource allows you place an order			
mpp-user : The API for Marketplace portal to read User details.		Show/Hide	List Operations	Expand Operations	Raw
mpp-category : The API for marketplace portal to read category info.					
		Show/Hide	List Operations	Expand Operations	Raw
organization : The operational reporting API for organizations. (internal use only)					

Note that API calls including "(internal use only)" in their description should not be used. These are intended for HP CSA product development only.

The content provides developers easy access to:

- Each call's URI syntax
- Whether there are any required or optional query parameters
- The data type of each parameter
- Model and schema information if applicable
- Interactive "Try it out!" dialogs that let you submit calls to your server, see the results, and understand how you need to construct your REST URIs and any request body.

Let's try out an API call.

1. If you have access to a CSA instance, launch the interactive API content from a browser at **https://<host>:<port>/csa/apidocs.jsp**.
2. If you are not already logged into CSA, you will be prompted to login. The user must have appropriate authority to exercise CSA RESTful calls.
3. Locate the *mpp-organization* API call. Click on that call's title to expand it to show the GET method, if it is not already visible.

- Click on the *GET* method to view the complete documentation for this call.

mpp-organization : The API for Marketplace portal to read Organization details.

GET /mpp/mpp-organization/{organizationName} [Read organization information](#)

Show/Hide | List Operations | Expand Operations | Raw

Response Class

Model | Model Schema

```
Map {
  empty (boolean, optional)
}
```

Response Content Type

Parameters

Parameter	Value	Description	Parameter Type	Data Type
organizationName	<input style="border: 1px solid #ccc;" type="text" value="{required}"/>	Unique name of organization	path	string

Error Status Codes

HTTP Status Code	Reason
400	Bad request
403	Authorization failure

[Try it out!](#)

- organizationName is a required parameter. Enter an organization name from your CSA instance. CSA_CONSUMER is a default organization provided out-of-the-box with CSA, and can be used.
- Click on the Try it out! button.
- You should now see the request URL that was sent, as well as the response body, response code and response headers for your request as shown here.

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#) | [Raw](#)

GET /mpp/mpp-organization/{organizationName} Read organization information

Response Class

Model | Model Schema

```
Map {
  empty (boolean, optional)
}
```

Response Content Type application/json

Parameters

Parameter	Value	Description	Parameter Type	Data Type
organizationName	CSA_CONSUMER	Unique name of organization	path	string

Error Status Codes

HTTP Status Code	Reason
400	Bad request
403	Authorization failure

[Try it out!](#) [Hide Response](#)

Request URL

https://[redacted]:8444/csa/api/mpp/mpp-organization/CSA_CONSUMER

Response Body

```
{
  "@self": "/csa/api/mpp/mpp-organization/BFA8D853DA404B90E04059106D1A2485",
  "@type": "urn:x-hp:2012:software:cloud:data_model:organization",
  "name": "CSA_CONSUMER",
  "description": "CSA Consumer organization",
  "ext": {
    "csa_name_key": "CSA_CONSUMER"
  },
  "id": "BFA8D853DA404B90E04059106D1A2485",
  "displayName": "CSA Consumer",
  "iconUrl": "csa/images/library/HP_Blue_RGB_150_MN.png",
  "portalTitle": "Cloud Service Automation",
  "portalWelcomeMsg": "Marketplace Portal",
  "portalShowLegalNotice": false,
  "portalLegalNoticeUrl": "http://www8.hp.com/us/en/privacy/privacy.html",
  "portalShowTermsOfUse": false,
  "portalTermsOfUseUrl": "http://www8.hp.com/us/en/privacy/terms-of-use.html",
  "portalShowLearnMore": false,
  "portalLearnMoreUrl": "http://www.hp.com/go/csa/"
}
```

Response Code

200

Response Headers

```
{
  "Pragma": "No-cache",
  "Date": "Tue, 26 Nov 2013 20:32:20 GMT",
  "Content-Encoding": "gzip",
  "Last-Modified": "Mon, 25 Nov 2013 19:51:45 GMT",
  "Server": "HP Cloud Service Automation"
}
```

Not every API call will be this simple to exercise, but this example demonstrates how the interactive API content is presented, and how RESTful calls can easily be made from this interface. In some situations you will need to make other API calls first to get information necessary for parameters or a request body.

Making API calls from an application

RESTful calls can be made from your custom application code. Preparation for making these calls is similar to making them from an HTTP client. Authentication and authorization requirements as explained in ["Communication with CSA" on page 11](#) must be met.

You also need to set the http headers `Content-Type:application/xml` or `application/json`, and `accept:application/xml` or `accept:application/json` as appropriate your the call you're making.

We appreciate your feedback!

If you have comments about this document, you can [contact the documentation team](#) by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on API Quick Start (Cloud Service Automation 4.10)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to CSAdocs@hp.com.

