REST implementation

Cloud Manager Automation

NetApp
February 21, 2022

This PDF was generated from https://docs.netapp.com/us-en/cloud-manager-automation/platform/concepts.html on February 21, 2022. Always check docs.netapp.com for the latest.

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REST implementation details

While REST establishes a common set of technologies and best practices, the details of each API can vary based on the design choices of the development team. You should be aware of the details and operational characteristics of the Cloud Manager REST API before using it with a live deployment.

Basic concepts

Representational State Transfer (REST) is a style for creating distributed web applications. When applied to the design of a web services API, it establishes a set of technologies and best practices for exposing server-based resources and managing their states. The Cloud Manager platform REST APIs use mainstream protocols and standards to provide a flexible foundation for deploying and administering your cloud-based resources.

Overview of the API resources

The REST style of application development begins by identifying the set of server-based resources. Considering the Cloud Volumes ONTAP API as an example, the resources are broadly categorized as follows:

- Administrative resources

  Used to set up and configure Cloud Manager

- Auditing resources

  Used to view details about Cloud Manager activities and operations

- Authentication resources

  Used to authenticate to Cloud Manager so you can make API calls

- Working environment resources

  Used to deploy and manage working environments, including: single Cloud Volumes ONTAP systems, Cloud Volumes ONTAP HA configurations, and ONTAP clusters

REST endpoints

REST resources are accessed through endpoints identified in the URL path. Each endpoint provides access to one of the following:

- Resource instance
- Collection of resource instances

Types of input parameters

There are several types of parameters available with the Cloud Manager platform APIs with each HTTP request.

Type	Description
Path parameter	Identifiers or names for resource instances that are included in the URL path.
Query parameter	One or more key-value pairs at the end of the URL which qualify and extend the base call.
Request header	Key-value pairs in the request which carry additional information available to the server.
Body parameter	Data which is optionally included with a request and formatted using JSON.

HTTP details

The Cloud Manager platform REST APIs are based on the HTTP protocol as well as JSON for content exchange. This section describes the details of how HTTP is used.

Request

HTTP methods

The HTTP methods supported by the Cloud Manager platform REST APIs are shown in the following table. Not all HTTP methods are available at each of the REST endpoints. For more information, see the reference documentation for the specific API you are using.

HTTP method	Description
GET	Retrieves object properties for a resource instance or collection of resources.
POST	Creates a new resource instance based on the supplied input values.
PUT	Updates an existing resource instance based on the supplied input values.
PATCH	Updates specific fields of an existing resource instance based on the supplied input values.
DELETE	Deletes an existing resource instance.

Request headers

The common HTTP request headers are described below.

Request header	Description
Authorization	This header contains a bearer token used to access the server.
x-agent-id	The agent identifier is based on the client ID and is used to identify the user agent.
Content-Type	This representation header is used to indicate the original media type of the resource.
Accept	The server automatically returns content in JSON format if Accept header is not specified.

Response

HTTP status codes

The common HTTP status codes are described below.

Status code	Reason Phrase	Description
200	OK	The request was completed successfully.
202	Accepted	The request was accepted and is currently in process. Cloud Manager returns this code when the API call operates asynchronously. For example, the `/vsa/working-environments` call returns with 202 but the Cloud Volumes ONTAP instance launches up to 25 minutes later.
204	No Content	The operation was completed successfully and the server did not send a response message.
400	Bad Request	The request input is not recognized or is inappropriate. An error response explains the reason.
401	Unauthorized	The user has not authenticated.
403	Forbidden	This operation is not allowed for the current authenticated user.
409	Conflict	The operation failed because another operation is already in progress.
420	---	Cloud Manager has not been set up. You must set up Cloud Manager using the API call /occm/setup/init
5xx	---	An unexpected error occurred within the Cloud Manager server which has prevented it from fulfilling the request.

Additional considerations

There are several additional characteristics of the Cloud Manager REST APIs affecting their operation and use. You should be aware of these considerations before issuing an API call.

Public identifiers

All resources exposed through the Cloud Volumes ONTAP API (for example, working environments) are assigned a public ID. Whenever a resource is created or returned, the public ID is displayed in the response. You must specify a resource's public ID when performing operations on the resource. For example, you must specify the public ID for a working environment when you create a volume.

Asynchronous processing

For most of the Cloud Manager platform REST APIs, all HTTP request methods except GET are processed asynchronously. If needed, you can check the status of an active task based on the `request id` returned in the original HTTP response. Each task has a status value as described in the following table.

Status	Description
1	The asynchronous task completed successfully.
0	The background task is still running and has not completed.

Status	Description
-1	The asynchronous task completed but failed.

For more information about how to retrieve the status of a background task for an asynchronous request see Get active task.

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