Get started

Cloud Manager Automation

NetApp
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Get started

Prepare to use the API

There are several things you should do to prepare before using the Cloud Volumes ONTAP REST API and associated workflows.

Review REST concepts and implementation

Make sure to review REST implementation details for information about REST concepts and the details of how the Cloud Volumes ONTAP REST API is designed.

Decide on the cloud provider and have credentials

Cloud Volumes ONTAP can be deployed in Amazon Web Services, Microsoft Azure, and Google Cloud Platform. You need to decide which of these providers you'll use and have the appropriate credentials.

Have Cloud Central credentials

You'll need a NetApp account (formerly NetApp Cloud Central) login to acquire an access token required for the workflow processes. See Signing up to NetApp Cloud Central for more information.

Be familiar with Cloud Volumes ONTAP concepts

If you intend to perform Cloud Volumes ONTAP administration tasks, you should be familiar with Cloud Volumes ONTAP concepts, terminology, and procedures. See Learn about Cloud Volumes ONTAP for more information.

Decide on the licensing model

You can create and manage Cloud Volumes ONTAP instances using a subscription PAYGO ("pay as you go") model or apply your own licenses with BYOL ("bring your own license"). You need to decide which licensing model you'll use and be ready to adjust the workflows as needed.

Prepare to use the workflow processes

Review Workflow processes for more information about the organization and content of the workflows. Also see Typical Cloud Manager deployment.

This documentation does not describe or use the Local UI.

Locate the client identifier

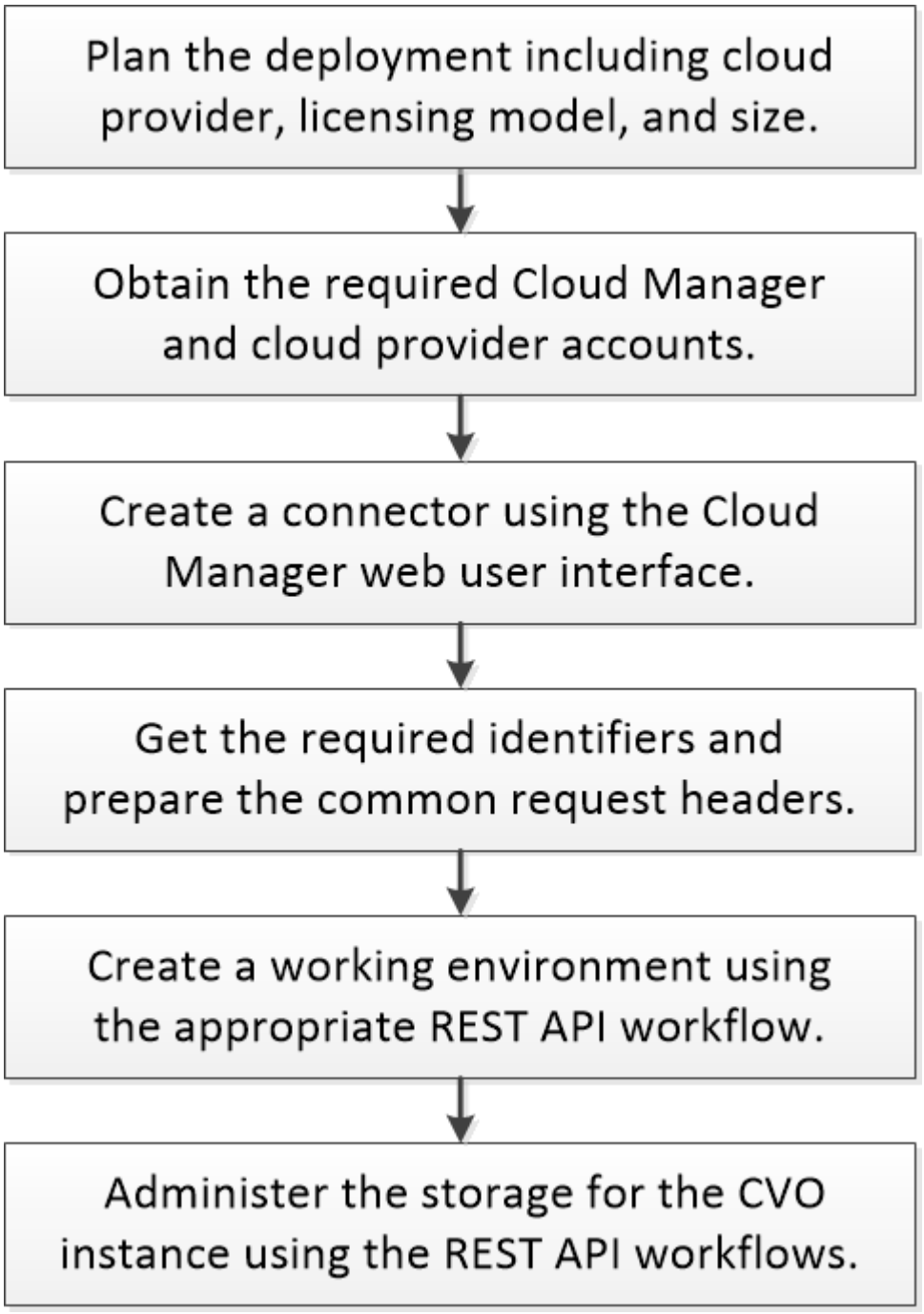
You'll need the `client id` value for several of the workflows. For more information see Get the client and account identifiers.

Get more information

You should be aware of the additional resources available as suggested in Additional resources.

Typical Cloud Volumes ONTAP deployment

A summary of the major steps needed to deploy and administer a Cloud Volumes ONTAP instance using the associated REST API is presented below.



Hello world

You can issue a curl command to get started using the Cloud Volumes ONTAP REST API and confirm its availability.

The example provided below is very simple. The workflow samples later in this guide use a more robust format. As a start, see Workflow processes.

Before you begin

You must do the following:

- Determine the identifier to use for the `x-agent-id` request header as well as the related client ID. See Get the client and account identifiers.
- Acquire an access token for the `Authorization` request header. See Create user token.

Curl example

The following curl command retrieves information about the Cloud Manager server.

```
curl --location --request GET
'https://cloudmanager.cloud.netapp.com/occm/api/occm/system/about'
--header 'Content-Type: application/json' --header 'x-agent-id:
<AGENT_ID>' --header 'Authorization: Bearer <ACCESS_TOKEN>'
```

Output example

Information about the system is provided in the following format.

```
{
  "version": "string",
  "build": "string",
  "buildTimestamp": "integer",
  "systemId": "string",
  "environment": "string",
  "siteIdentifier": {
    "company": "string",
    "host": "string",
    "site": "string"
  },
  "serverTimeZone": {
    "timeZoneName": "string",
    "formattedTimeZone": "string"
  },
  "beta": "boolean",
  "releaseNumber": "integer",
  "simplicatorUrl": "string",
  "migrationPerformed": "boolean",
  "demoMode": "boolean",
  "usingDockerInfra": "boolean",
  "privateIp": "string"
}
```

Cloud Volumes ONTAP workflow processes

You should be familiar with the organization and format of the Cloud Volumes ONTAP workflow processes before using them with a live deployment.

Before getting started with the Cloud Volumes ONTAP workflows, see Workflow processes and tasks for an introduction to how workflows and tasks are generally used with the Cloud Manager platform.

High level organization of the workflows

At a high level, the Cloud Volumes ONTAP workflows are organized based on three primary attributes. The organization is reflected in the navigation sidebar.

1. Cloud provider

Most of the workflows can be performed with one cloud provider. The supported cloud platforms include:

- Amazon Web Services
- Microsoft Azure
- Google Cloud Platform

2. Functional category

The workflows for each cloud provider (AWS, Azure, GCP) are placed in a specific functional category. The major categories as reflected in the navigation sidebar are presented below.

In addition to the workflows used with the specific cloud providers, there is also a set of common workflows that can be used with any cloud provider. See Common workflows for all cloud providers for more information about these workflows and how they are organized.

Working environments

A working environment is the context within which a Cloud Volumes ONTAP instance is deployed and run. These workflows allow you to create working environments and perform related administrative tasks. You can perform specific workflows to create a working environment based on your preferred licensing model (PAYGO or BYOL), remove a working environment, and retrieve the details of a working environment. In addition, you can configure the CIFS server when creating a volume that uses the CIFS protocol as part of creating a working environment.

Aggregates

An aggregate is the low-level structure for Cloud Volumes ONTAP storage. These workflows allow you to create aggregates and perform related administrative tasks.

Volumes

You can expose the storage volumes for use by your applications. You can perform these workflows to create a volume (using NFS, CIFS, or iSCSI protocol) as well as delete, retrieve, and modify an existing volume based on your storage requirements.

Metadata

The metadata workflows allow you to view and administer the basic configuration of your cloud environment.

Miscellaneous

A workflow that is not assigned to an existing functional category is considered *Miscellaneous*. For example, there is a workflow to create a cloud provider account. The cloud provider account securely stores and manages your cloud provider credentials and establishes an identity for users (such as InstanceProfile with AWS and ManagedIdentity with Azure). This account provides fine-grained authorization of the services and resources based on multiple critical conditions.

3. Single node and High availability workflows

Many of the workflows vary based on the type of the deployment.

Single node

The cluster consists of a single Cloud Volumes ONTAP instance or ONTAP node.

HA pair

The cluster consists of two linked Cloud Volumes ONTAP instances which together provide the ONTAP high availability (HA) feature.

If both versions of a workflow exist for an administrative task, they are included on the same page.

Presentation of common tokens and identifiers

Most of the variable tokens, identifiers, and other variables used in the sample REST API calls consist of long strings of letters, numbers, and special characters. They are considered *opaque* with no easily discernible content or meaning. Therefore, rather than including the actual original strings, smaller reserved keywords are used instead. This has several benefits:

- The curl and JSON samples are simpler and easier to understand.
- Because all keywords use the same format (including capital letters), you can quickly identify the content to insert or extract.
- No value is lost because the original values cannot be copied and used with an actual deployment.

A list of the keywords used in the workflow curl examples is presented in the table below.

Keyword	Description
<ACCESS_TOKEN>	An access token is a temporary string which establishes identity and access based on the OAuth2 standard.
<ID_TOKEN>	The ID token contains additional identity information for the user based on OpenID Connect (OIDC).
<CLIENT_ID>	This value uniquely identifies the user within a specific authorization domain.
<AGENT_ID>	The agent identifier is based on the client ID and is used to identify the user agent.
<ACCOUNT_ID>	This value identifies your NetApp account.
<NSS_KEY_ID>	This value identifies an entitlement key and is used by NetApp support.
<WORKING_ENV_ID>	This value identifies a working environment for the ONTAP runtime and so is synonymous with a Cloud Volumes ONTAP instance.

Keyword	Description
<SVM_NAME>	The name used for an ONTAP storage virtual machine.
<VOLUME_NAME>	The name used for an ONTAP storage volume.
<AGGR_NAME>	The aggregate name for a disk operation.
<REQUEST_ID>	This value is returned to the caller in the HTTP response and uniquely identifies the request.
<PROVIDER>	Abbreviation for the cloud provider.
<CLOUD_ACC_ID>	Account ID for the cloud provider.
<REFRESH_TOKEN>	NetApp refresh token used for federated authentication.

Working environment status requirements

Many of the workflows require the working environment to have a specific status (such as `ON` or `DEGRADED`) before the REST API call can be performed. Review the API reference content for details about the requirements for each API call.