



# **Manage on-prem ONTAP clusters**

## Cloud Manager

NetApp  
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# Manage on-prem ONTAP clusters

## Discovering ONTAP clusters

Cloud Manager can discover the ONTAP clusters in your on-premises environment, in a NetApp Private Storage configuration, and in the IBM Cloud. Adding on-prem clusters to the Cloud Manager Canvas enables you to manage these clusters using the same tools as your Cloud Volumes ONTAP and other cloud storage solutions.

In addition to being able to provision storage on those systems, adding these systems to Cloud Manager also makes it easy to configure critical cloud-based services for those clusters. This includes replicating data to the cloud, backing up data to the cloud, tiering cold data to the cloud, and running compliance scans on that data.

### What you'll need

- A Connector installed in a cloud provider or on your premises.

If you want to tier cold data to the cloud, then you should review requirements for the Connector based on where you plan to tier cold data.

- [Learn about Connectors](#)
- [Switching between Connectors](#)
- [Learn about Cloud Tiering](#)

- The cluster management IP address and the password for the admin user account to add the cluster to Cloud Manager.

Cloud Manager discovers ONTAP clusters using HTTPS. If you use custom firewall policies, they must meet the following requirements:

- The Connector host must allow outbound HTTPS access through port 443.

If the Connector is in the cloud, all outbound communication is allowed by the predefined security group.

- The ONTAP cluster must allow inbound HTTPS access through port 443.

The default "mgmt" firewall policy allows inbound HTTPS access from all IP addresses. If you modified this default policy, or if you created your own firewall policy, you must associate the HTTPS protocol with that policy and enable access from the Connector host.

- A valid set of NetApp Support Site credentials for accessing the Active IQ page. See how to [add NetApp Support Site accounts to Cloud Manager](#).

## Checking for on-premises clusters that have not been added to Cloud Manager

You can use the Active IQ service in Cloud Manager to discover, view, and manage your on-prem ONTAP clusters that are under a support contract.



If your support contract expires, the systems are removed from the Active IQ page. However, you can continue to manage these systems in their working environment. See how to [renew your support contract from Active IQ Digital Advisor](#).

## Steps

1. From Cloud Manager, click the **Active IQ** tab.
2. Select the Active IQ login associated with your NSS account if necessary.

The screenshot shows the Active IQ dashboard. At the top left is the 'Active IQ' logo. At the top right, there is a user profile for 'ntapitdemo' and a customer name 'Ntap IT'. The dashboard is divided into several sections: 'On-Premise Cluster Inventory' with a donut chart showing 1 Discovered and 41 Undiscovered clusters; 'Licenses' with a donut chart showing 12 Used and 18 Unused licenses; 'Firmware Updates for On-Premise Clusters' showing 7 updates available; and 'Cloud Ready Workloads' showing 1375 workloads. Below these sections is a navigation bar with tabs for 'Cluster Inventory (42)', 'Licenses (30)', 'Firmware Updates (7)', and 'Cloud Ready Workloads (1375)', along with a 'Download CSV' button. The main content area is a table with columns for Cluster Name, Cluster Status, OS Version, and IP Address. The table lists two clusters: 'duriabu01' (Discovered) and 'durbclu99' (Undiscovered). A 'Discover' button is visible next to the 'durbclu99' row.

Your ONTAP clusters that have a valid support contract are displayed with a status of whether they have been discovered in Cloud Manager.

3. If you want to manage the clusters that are listed as "Undiscovered" using Cloud Manager, click **Discover** and follow the prompts to add them.

## Discovering clusters from the Active IQ page

You can discover your ONTAP clusters and add them to a working environment from the Active IQ page.

## Steps

1. From the **Active IQ** page, click the **Cluster Inventory** tab.

This screenshot is a zoomed-in view of the 'Cluster Inventory' table. The table has columns for Cluster Name, Cluster Status, OS Version, and IP Address. It lists three clusters: 'duriabdu01' (Discovered), 'durbku99' (Undiscovered), and 'blrclu02' (Undiscovered). The 'Discover' button next to the 'durbku99' row is highlighted with a red box.

2. Click **Discover** for the cluster that you want to manage through Cloud Manager.
3. On the *Choose a Location* page **On-Premises ONTAP** is pre-selected, so just click **Continue**.

4. On the *ONTAP Cluster Details* page, enter the password for the admin user account and click **Add**.

Note that the cluster management IP address is populated based on information from Active IQ.

5. On the *Details & Credentials* page the cluster name is added as the Working Environment Name, so just click **Go**.

### Result

Cloud Manager discovers the cluster and adds it to a working environment in the Canvas using the cluster name as the working environment name.



You can enable services for this cluster in the right panel to replicate data to and from the cluster, set up data tiering to the cloud, back up volumes to the cloud, or run compliance scans on the volumes. You can also create new volumes or launch System Manager to perform advanced tasks.

## Discovering clusters from the Canvas page

You can discover your ONTAP clusters and add them to a working environment from the Canvas page. These steps can be used in cases where the cluster is not listed in the Active IQ page because it currently has no support contract.

### Steps

1. On the Canvas page, click **Add Working Environment** and select **On-Premises ONTAP**.
2. If you're prompted, create a Connector.

Refer to the links above for more details.

3. On the *ONTAP Cluster Details* page, enter the cluster management IP address, the password for the admin user account, and click **Add**.
4. On the *Details & Credentials* page, enter a name and description for the working environment, and then click **Go**.

### Result

Cloud Manager discovers the cluster and adds it to a working environment in the Canvas.

You can enable services for this cluster in the right panel to replicate data to and from the cluster, set up data tiering to the cloud, back up volumes to the cloud, or run compliance scans on the volumes. You can also create new volumes or launch System Manager to perform advanced tasks.

# Using Active IQ data to manage ONTAP clusters

The Active IQ page in Cloud Manager shows you any undiscovered ONTAP clusters in your on-premises environments, whether any clusters require updated disk or shelf firmware, and if you are using all the Cloud Volumes ONTAP licenses that you were granted when you purchased the on-prem systems. This information is provided to Cloud Manager from [Active IQ Digital Advisor](#).

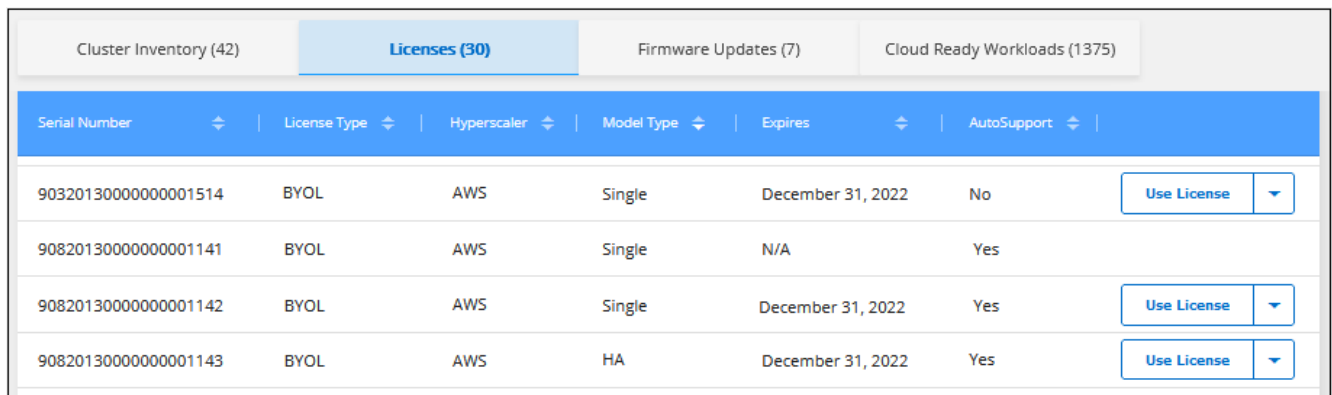
## Viewing unused Cloud Volumes ONTAP licenses

Many on-premises ONTAP storage system packages that you purchased included a free Cloud Volumes ONTAP license so you can try the NetApp cloud storage offerings in Cloud Manager. You can use the license to create a new Cloud Volumes ONTAP instance, or you can apply the license to an existing Cloud Volumes ONTAP instance to expand the capacity by 368 TiB.

You can see whether you have any unused Cloud Volumes ONTAP licenses based on your NetApp Support Site credentials.

### Steps

1. In Cloud Manager, click the **Active IQ** tab.
2. Click the **Licenses** tab in the lower portion of the page.



Cluster Inventory (42)	Licenses (30)	Firmware Updates (7)	Cloud Ready Workloads (1375)			
Serial Number	License Type	Hyperscaler	Model Type	Expires	AutoSupport	
90320130000000001514	BYOL	AWS	Single	December 31, 2022	No	Use License
90820130000000001141	BYOL	AWS	Single	N/A	Yes	
90820130000000001142	BYOL	AWS	Single	December 31, 2022	Yes	Use License
90820130000000001143	BYOL	AWS	HA	December 31, 2022	Yes	Use License

A **Use License** button appears for each unused license.

3. If you want to activate and start using the license, click **Use License**.



See the tasks below to learn about the options for using the available licenses.

## Using unused Cloud Volumes ONTAP licenses

You can use unused licenses to create a new Cloud Volumes ONTAP instance or to extend the capacity of the license on an existing Cloud Volumes ONTAP instance. The capacity of the license is 368 TiB.

The *Expires* column indicates the last day the license is active. When creating a new Cloud Volumes ONTAP system this is the date the license expires. When updating an existing Cloud Volumes ONTAP system this

indicates the length of time the existing license is extended.

The *License Type*, *Hyperscaler*, and *Model Type* columns describe the type of Cloud Volumes ONTAP license it is. For example, **BYOL | Single | Azure** means the license is a "bring-your-own" license for a "single node" Cloud Volumes ONTAP system deployed in "Microsoft Azure". The values that can appear in this column are shown in the table.

Column	Values
License Type	PAYGO BYOL
Hyperscaler	Azure AWS GCP All Providers
Model Type	Single HA

When creating a *new* Cloud Volumes ONTAP system, this is the type of system you are deploying. For example, using the sample license (**BYOL | Single | Azure**), you can create a single-node Cloud Volumes ONTAP system in Azure with entitlement for up to 368 TiB. This license can't be used to create an HA system or to deploy an instance in AWS.

When updating an *existing* Cloud Volumes ONTAP system, this indicates the type of system that can have the capacity for its existing license extended. Using the sample license again, you can extend the license for any single-node Cloud Volumes ONTAP system in Azure. This license can't be used to extend the license for an HA system or for an instance deployed in AWS.

### Creating a new Cloud Volumes ONTAP system with the unused license

Follow these steps to create a new Cloud Volumes ONTAP instance with the unused license.

#### Steps

1. Click **Use License** and select **Use License for a new Cloud Volumes ONTAP**.
2. In the "Use License..." page, verify the license information and click **Use License**.

In most cases you will be directed to the **Details & Credentials** page for creating the working environment for the Cloud Volumes ONTAP system because both the cloud provider and number of nodes are defined by the license.

If you are using a license defined as "All Providers", then you are directed to the **Choose a Location** page so you can pick the cloud provider first, before completing the **Details & Credentials** page.

3. Follow the steps to create the working environment and your first volume.

See the following sections depending on the cloud provider on which you are deploying the Cloud Volumes ONTAP system.

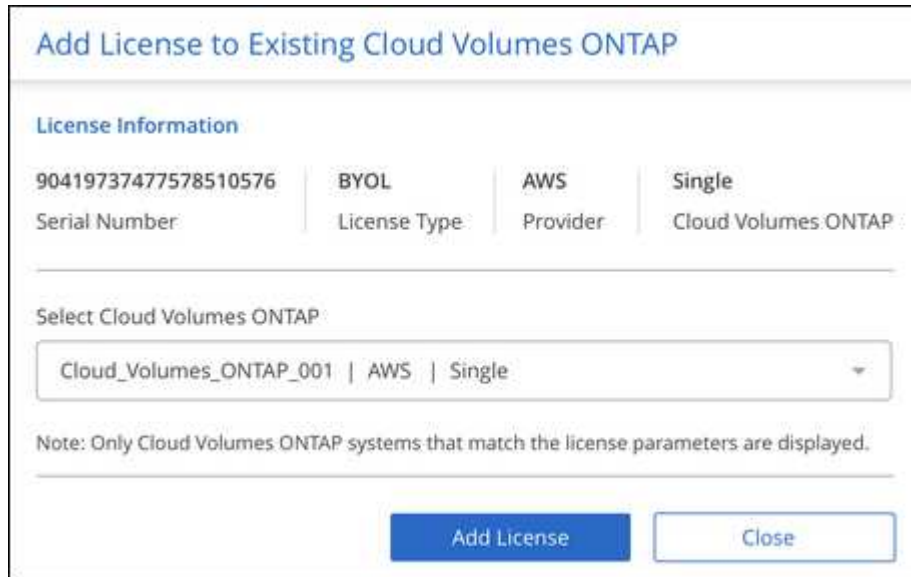
- [Launching Cloud Volumes ONTAP in Azure](#)
- [Launching Cloud Volumes ONTAP in AWS](#)
- [Launching Cloud Volumes ONTAP in GCP](#)

## Extending the license capacity for an existing Cloud Volumes ONTAP system

If you have a currently deployed Cloud Volumes ONTAP system that matches the license requirements of one of the free licenses (meaning the same cloud provider, number of nodes, etc.), you can follow these steps to extend the capacity of the license by 368 TiB.

### Steps

1. Click **Use License** and select **Add License to existing Cloud Volumes ONTAP**.



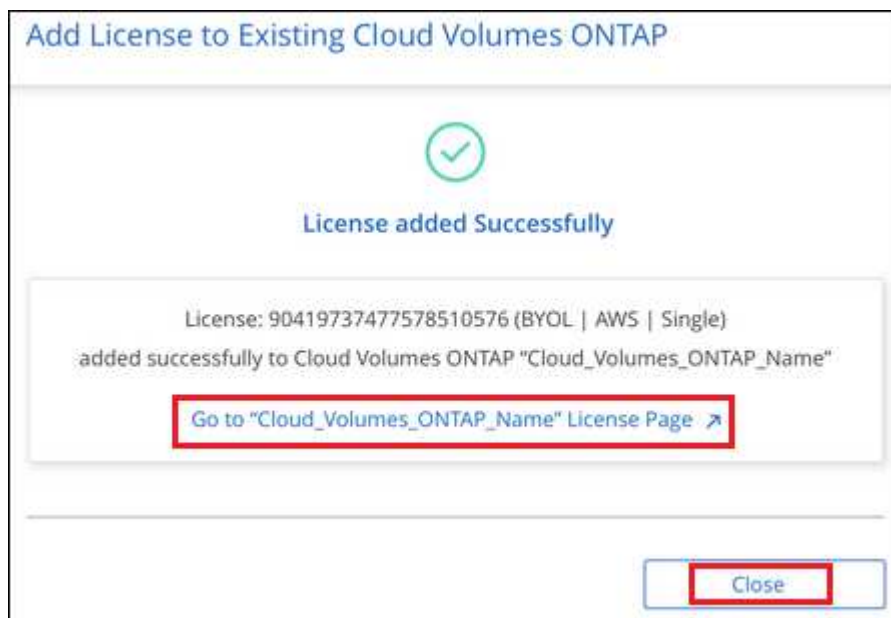
The screenshot shows a dialog box titled "Add License to Existing Cloud Volumes ONTAP". Under the "License Information" section, there is a table with the following details:

90419737477578510576	BYOL	AWS	Single
Serial Number	License Type	Provider	Cloud Volumes ONTAP

Below the table, there is a dropdown menu labeled "Select Cloud Volumes ONTAP" with the selected option "Cloud\_Volumes\_ONTAP\_001 | AWS | Single". A note below the dropdown states: "Note: Only Cloud Volumes ONTAP systems that match the license parameters are displayed." At the bottom of the dialog, there are two buttons: "Add License" (highlighted in yellow) and "Close".

2. In the "Add License..." page, select the Cloud Volumes ONTAP system where you want to extend the license and click **Add License**.

A confirmation dialog is displayed.



The screenshot shows a confirmation dialog box titled "Add License to Existing Cloud Volumes ONTAP". It features a green checkmark icon and the text "License added Successfully". Below this, it displays the license details: "License: 90419737477578510576 (BYOL | AWS | Single) added successfully to Cloud Volumes ONTAP 'Cloud\_Volumes\_ONTAP\_Name'". A red box highlights a link that says "Go to 'Cloud\_Volumes\_ONTAP\_Name' License Page >". At the bottom right, there is a "Close" button, also highlighted with a red box.

3. You can click **Close** to close the window and return to the Active IQ page, or you can click the link to go to the Cloud Volumes ONTAP Licensing page to view more details about licensing for that system.



## Downloading new disk and shelf firmware

You can see whether any of your discovered ONTAP clusters need to have their shelf or disk firmware updated. And you can download the Ansible playbook to upgrade the firmware.

**Note:** The ability to view and download new firmware is available only when you have subscribed to certain support plans.

### Steps

1. From the Active IQ page, click the **Firmware Updates** tab.

Cluster Name	Cluster Status	Disk Firmware	Shelf Firmware
durbkpcclu99	Undiscovered	Update Available	No Updates Available
durdevnasclu01	Undiscovered	Update Available	No Updates Available
durlabdevclu01	Discovered	No Updates Available	No Updates Available
blrprdclu02	Undiscovered	No Updates Available	No Updates Available

If any cluster require new firmware, a **Download All** button appears.

2. Click **Download All** and save the zip file.
3. Unzip the zip file and see the following instructions to [update your storage system firmware](#).

### Result

Your firmware is updated. The next time your ONTAP system sends an AutoSupport message to Active IQ, the status in the *Firmware Updates* page will be updated to show that updates are no longer needed.

## Viewing on-prem workloads that are candidates for the cloud

Certain workloads or volumes are ideal to move to a Cloud Volumes ONTAP system from your on-prem ONTAP clusters. Some of the advantages include reduced costs and improved performance and resiliency. The *Cloud Ready Workloads* tab provides a list of these workloads from your discovered ONTAP clusters.

Cluster Name	Cluster Status	SVM Name	Volume Name	Workload Type
hioprclu02	Undiscovered	vsvhiopax01prd	volpaxprd_hanabackup01	SAP HANA
hioprclu02	Undiscovered	svmhiocdb02prd	volcldbprd_sqluserdata01	MSSQL
durdevclu02	Discovered	vsvdurpax01spd	volpaxdev_hana_data	SAP HANA
durdevclu02	Discovered	vsvdurpax01spd	volpaxstg_hana_backup	SAP HANA
durdevclu02	Discovered	vsvdurerp01spd	xdperpspd_oradata02	ORACLE

The supported workloads that are called out on this page include: SAP, SAP HANA, Oracle, File share, and SharePoint.

*Lift and shift* is an approach for migrating your apps to the cloud. It means moving an application and its associated data to a cloud platform without redesigning the app. See more information about [lift and shift](#).

## Managing storage for ONTAP clusters

After you discover your ONTAP cluster from Cloud Manager, you can open the working environment to provision and manage storage.

### Creating volumes for ONTAP clusters

Cloud Manager enables you to provision NFS, CIFS, and iSCSI volumes on ONTAP clusters.

A Cloud Manager feature called "templates" enables you to create volumes that are optimized for the workload requirements for certain applications; such as databases or streaming services. If your organization has created volume templates that you should use, follow [these steps](#).

#### Before you begin

The data protocols must be set up on the cluster using System Manager or the CLI.

#### About this task

You can create volumes on existing aggregates. You can't create new aggregates from Cloud Manager.

#### Steps

1. On the Canvas page, double-click the name of the ONTAP cluster on which you want to provision volumes.
2. Click **Add New Volume**.
3. On the Create New Volume page, enter details for the volume, and then click **Create**.

Some of the fields in this page are self-explanatory. The following table describes fields for which you might need guidance:

Field	Description
Size	The maximum size that you can enter largely depends on whether you enable thin provisioning, which enables you to create a volume that is bigger than the physical storage currently available to it.
Snapshot Policy	A Snapshot copy policy specifies the frequency and number of automatically created NetApp Snapshot copies. A NetApp Snapshot copy is a point-in-time file system image that has no performance impact and requires minimal storage. You can choose the default policy or none. You might choose none for transient data: for example, tempdb for Microsoft SQL Server.
Access control (for NFS only)	An export policy defines the clients in the subnet that can access the volume. By default, Cloud Manager enters a value that provides access to all instances in the subnet.

Field	Description
Permissions and Users / Groups (for CIFS only)	These fields enable you to control the level of access to a share for users and groups (also called access control lists or ACLs). You can specify local or domain Windows users or groups, or UNIX users or groups. If you specify a domain Windows user name, you must include the user's domain using the format domain\username.
Initiator group and IQN (for iSCSI only)	<p>iSCSI storage targets are called LUNs (logical units) and are presented to hosts as standard block devices.</p> <p>Initiator groups are tables of iSCSI host node names and control which initiators have access to which LUNs.</p> <p>iSCSI targets connect to the network through standard Ethernet network adapters (NICs), TCP offload engine (TOE) cards with software initiators, converged network adapters (CNAs) or dedicated host bus adapters (HBAs) and are identified by iSCSI qualified names (IQNs).</p> <p>When you create an iSCSI volume, Cloud Manager automatically creates a LUN for you. We've made it simple by creating just one LUN per volume, so there's no management involved. After you create the volume, select it, click Target IQN, and then use the IQN to connect to the LUN from your hosts.</p>
Usage Profile	Usage profiles define the NetApp storage efficiency features that are enabled for a volume.

## Creating volumes from templates

If your organization has created on-premises ONTAP volume templates so you can deploy volumes that are optimized for the workload requirements for certain applications, follow the steps in this section.

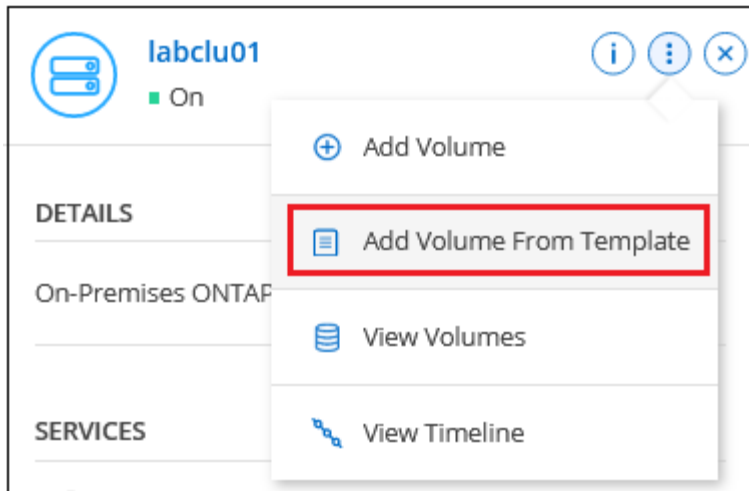
The template should make your job easier because certain volume parameters will already be defined in the template, such as disk type, size, protocol, snapshot policy, and more. When a parameter is already predefined, you can just skip to the next volume parameter.



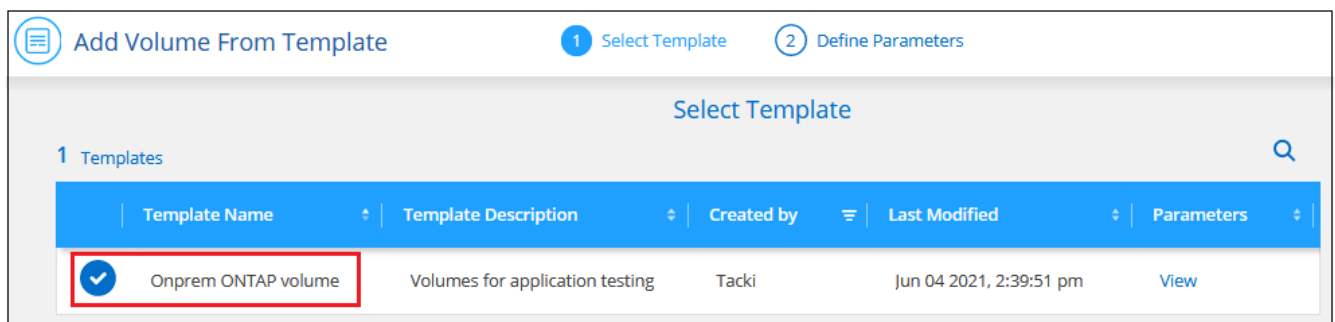
You can only create NFS or CIFS volumes when using templates.

### Steps

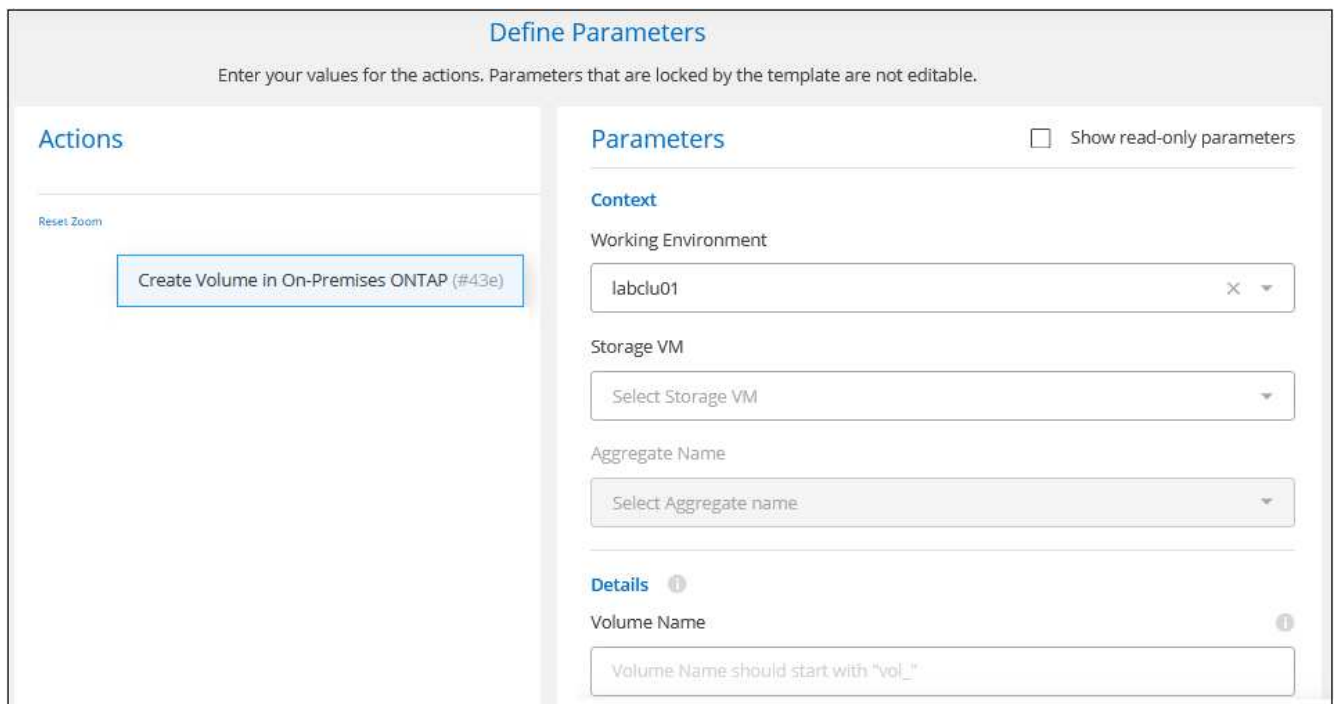
1. On the Canvas page, click the name of the on-premises ONTAP system on which you want to provision a volume.
2. Click > **Add Volume From Template**.



3. In the *Select Template* page, select the template that you want to use to create the volume and click **Next**.



The *Define Parameters* page is displayed.

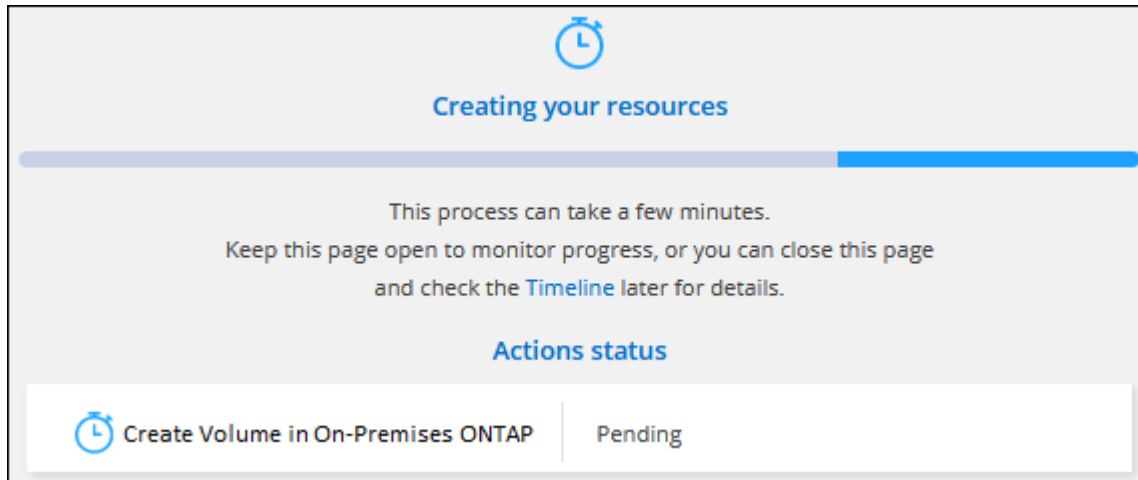


**Note:** You can click the checkbox **Show read-only parameters** to show all the fields that have been locked by the template if you want to see the values for those parameters. By default these predefined fields are hidden and only the fields you need to complete are shown.

4. In the *Context* area, the Working Environment is filled in with the name of the working environment you started with. You need to select the **Storage VM** and **Aggregate** where the volume will be created.
5. Add values for all of the parameters that are not hard-coded from the template. See [creating volumes](#) for details about all the parameters you need to complete to deploy an on-prem ONTAP volume.
6. Click **Run Template** after you have defined all the parameters needed for this volume.

## Result

Cloud Manager provisions the volume and displays a page so that you can see the progress.



Then the new volume is added to the working environment.

Additionally, if any secondary action is implemented in the template, for example, enabling Cloud Backup on the volume, that action is also performed.

## After you finish

If you provisioned a CIFS share, give users or groups permissions to the files and folders and verify that those users can access the share and create a file.

## Replicating data

You can replicate data between Cloud Volumes ONTAP systems and ONTAP clusters by choosing a one-time data replication, which can help you move data to and from the cloud, or a recurring schedule, which can help with disaster recovery or long-term retention.

[Click here for more details.](#)

## Backing up data

You can back up data from your on-premises ONTAP system to low-cost object storage in the cloud by using the Cloud Manager Cloud Backup service. This service provides backup and restore capabilities for protection and long-term archive of your cloud data.

[Click here for more details.](#)

## Tiering data to the cloud

Extend your data center to the cloud by automatically tiering inactive data from ONTAP clusters to object

storage.

[Click here for more details.](#)

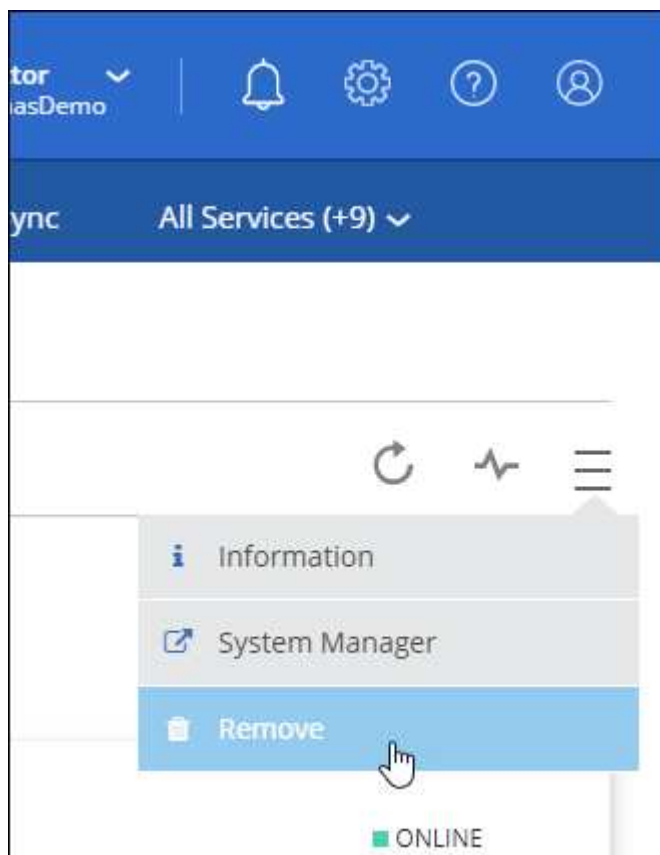
## Remove an on-prem ONTAP working environment

Remove an on-premises ONTAP working environment if you no longer want to manage it from Cloud Manager.

Removing the working environment doesn't affect the ONTAP cluster. You can rediscover it from Cloud Manager at any time.

### Steps

1. On the Canvas page, double-click the name of the on-premises ONTAP working environment.
2. Click the menu icon and select **Remove**.



3. Click **Remove** to confirm.

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