Manage on-prem ONTAP clusters

Cloud Manager

NetApp
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Discovering on-premises 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 view hardware and software contract status information in the Digital Wallet, and 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.

Requirements

- 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. See how to add NetApp Support Site accounts to Cloud Manager.

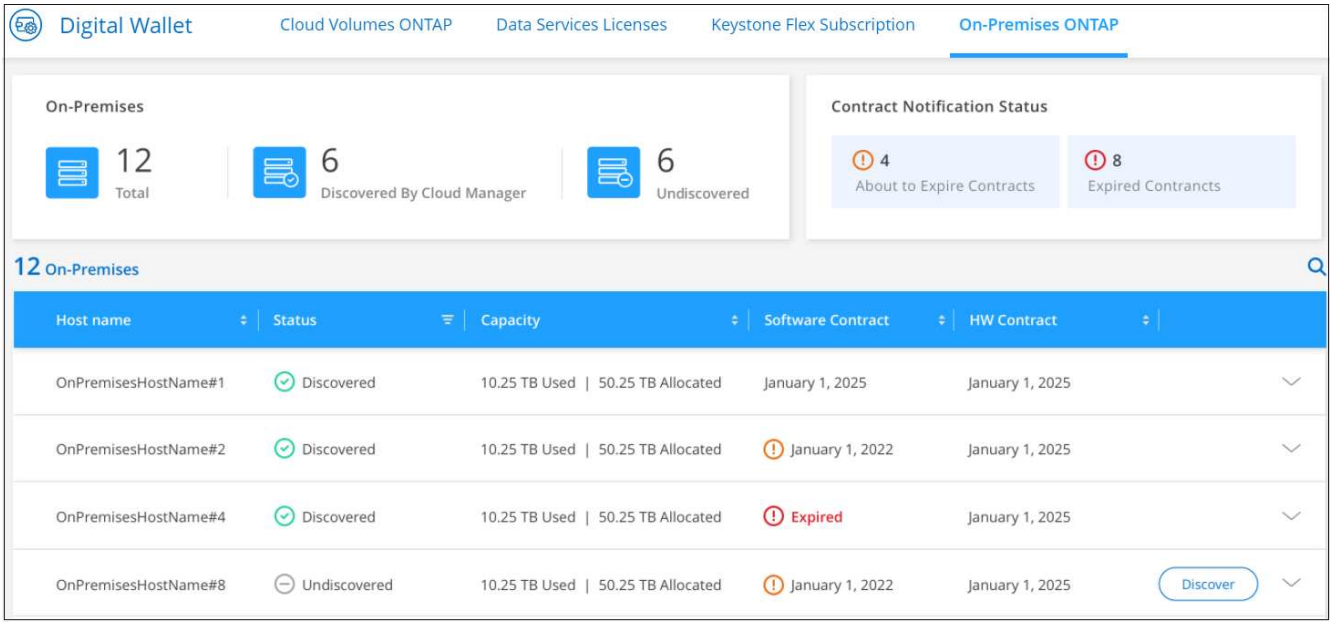
Viewing discovered and undiscovered on-prem clusters

You can use the *Digital Wallet* or the *Discovery* service in Cloud Manager to view, discover, and manage your on-prem ONTAP clusters that are under a support contract.

To view on-prem clusters and license details from the *Digital Wallet*:

Steps

1. From Cloud Manager, select the **Digital Wallet** service.
2. Click the **On-Premises ONTAP** tab.



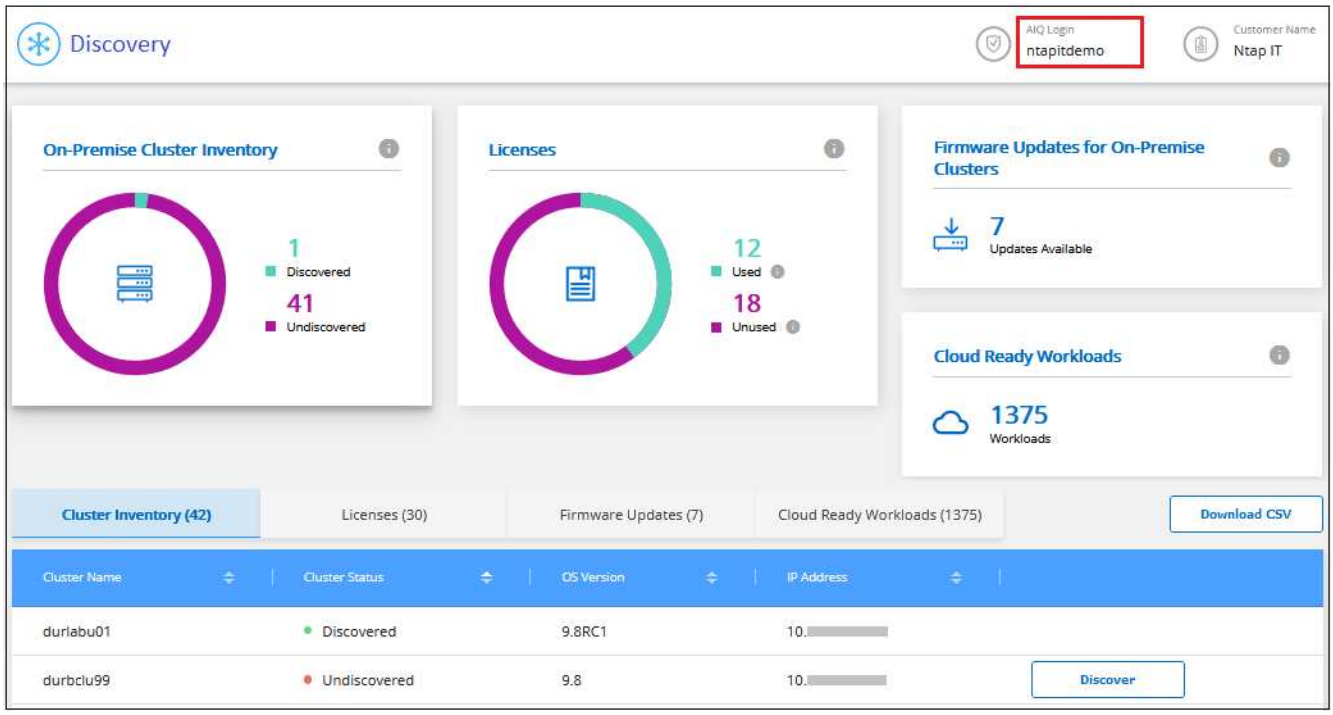
Your ONTAP clusters are displayed with a status of whether they have been discovered in Cloud Manager.

If you are prompted to enter your NetApp Support Site (NSS) account credentials first, enter them in the Support Dashboard. After you have added the account, the clusters that are included in that account are displayed.

To view on-prem clusters and license details from the *Discovery service*:

Steps

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



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

If your support contract expires, the systems are removed from the Discovery 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.

Viewing cluster information and contract details

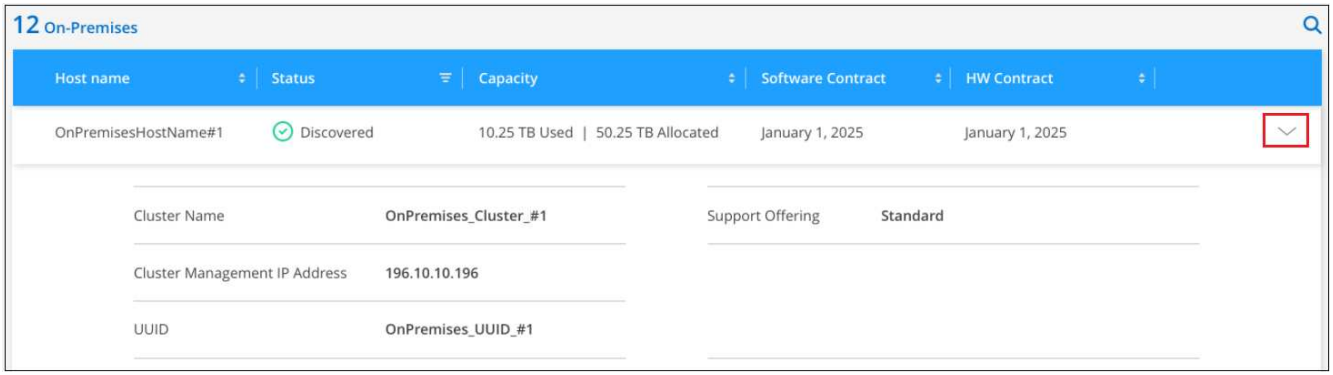
You can use the *Digital Wallet* to view cluster details and hardware and software contract status.

Steps

1. In the **Digital Wallet**, click the **On-Premises ONTAP** tab.

   The Software Contract and Hardware Contract expiration dates appear on the line for each cluster.

2. If the contract is close to the expiration date, or has expired, you can click the chat icon in the lower-right of Cloud Manager to request an extension to the contract.
3. For clusters that you want to know additional details, click ⌄ to expand the cluster information.



Discovering on-prem clusters from Cloud Manager

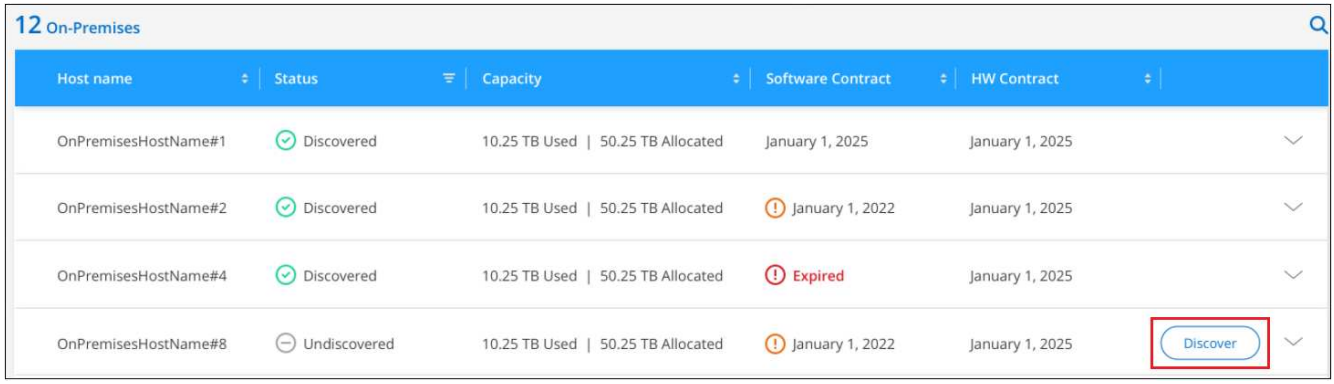
You can discover on-prem ONTAP clusters in Cloud Manager from the *Digital Wallet*, the *Discovery* service, or from the *Canvas*. Once discovered, they are available as a working environment in Cloud Manager so that you can manage the cluster.

Discovering clusters from the Digital Wallet

You can discover your ONTAP clusters from the Digital Wallet and add them as a working environment.

Steps

1. From the **Digital Wallet**, click the **On-Premises ONTAP** tab.



2. Click **Discover** for the cluster that you want to manage through Cloud Manager.
3. On the *Discover ONTAP Cluster* page, enter the password for the admin user account and click **Discover**.

   Note that the cluster management IP address is populated based on information from the Digital Wallet.

   The status for the cluster turns to **Discovered** in the *On-Premises ONTAP* page.

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.

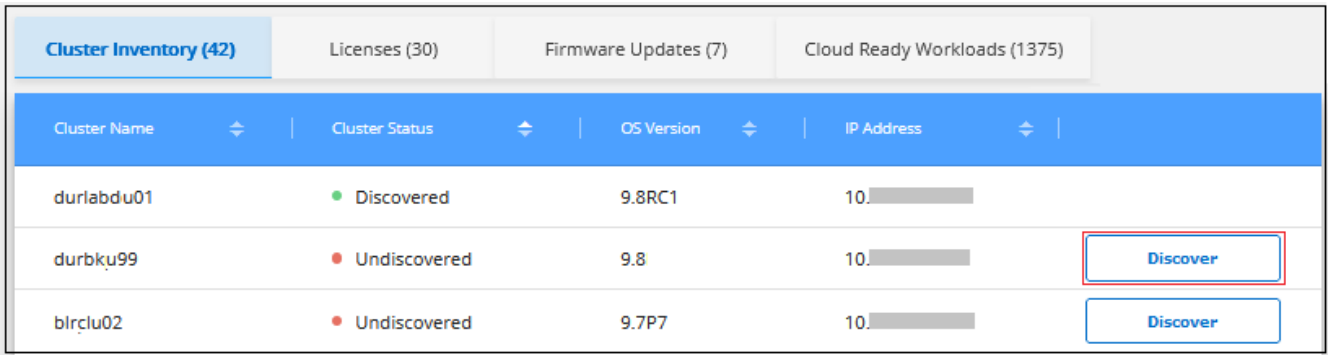
You can enable services for this cluster in the right panel to replicate data to and from the cluster, set up data tiering to the cloud, back up volumes to the cloud, or run compliance scans on the volumes. You can also create new volumes or launch System Manager to perform advanced tasks.

Discovering clusters from the Discovery page

You can discover your ONTAP clusters from the Discovery page and add them as a working environment.

Steps

1. From the **Discovery** page, click the **Cluster Inventory** tab.



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 as a working environment from the Canvas page. These steps can be used in cases where the cluster is not listed in the Digital Wallet or Discovery 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.

Managing storage for on-prem ONTAP clusters

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

Creating volumes

Cloud Manager enables you to create NFS or CIFS volumes on existing aggregates. You can't create new aggregates on an on-prem ONTAP cluster from Cloud Manager.

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.

Steps

1. On the Canvas page, double-click the name of the on-prem ONTAP cluster on which you want to provision volumes.
2. Click **Add New Volume**.
3. Follow the steps in the wizard to create the volume.
   a. **Details & Protection**: Enter basic details about the volume and then select a Snapshot policy.

      Some of the fields on this page are self-explanatory. The following list 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.

   b. **Protocol**: Choose the protocol for the volume (NFS or CIFS) and then set the access control or permissions for the volume.

      If you choose CIFS and a server isn't set up yet, then Cloud Manager prompts you to set up a CIFS server using either Active Directory or a workgroup.

      The following list describes fields for which you might need guidance:

Field	Description
Access Control	An NFS 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.
Permissions and Users/Groups	These fields enable you to control the level of access to an SMB 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.

c. **Usage Profile**: Choose whether to enable or disable storage efficiency features on the volume.

ONTAP includes several storage efficiency features that can reduce the total amount of storage that you need. NetApp storage efficiency features provide the following benefits:

Thin provisioning

Presents more logical storage to hosts or users than you actually have in your physical storage pool. Instead of preallocating storage space, storage space is allocated dynamically to each volume as data is written.

Deduplication

Improves efficiency by locating identical blocks of data and replacing them with references to a single shared block. This technique reduces storage capacity requirements by eliminating redundant blocks of data that reside in the same volume.

Compression

Reduces the physical capacity required to store data by compressing data within a volume on primary, secondary, and archive storage.

d. **Review**: Review details about the volume and then click **Add**.

Creating volumes from templates

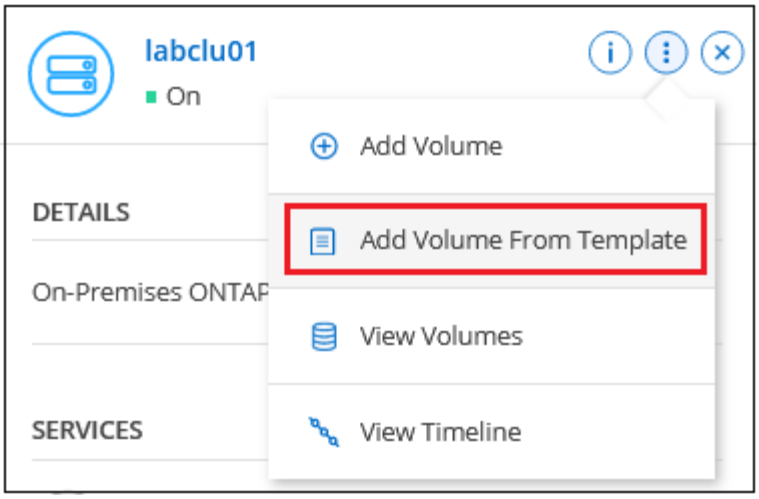
If your organization has created on-premises ONTAP volume templates so you can deploy volumes that are optimized for the workload requirements for certain applications, follow the steps in this section.

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.

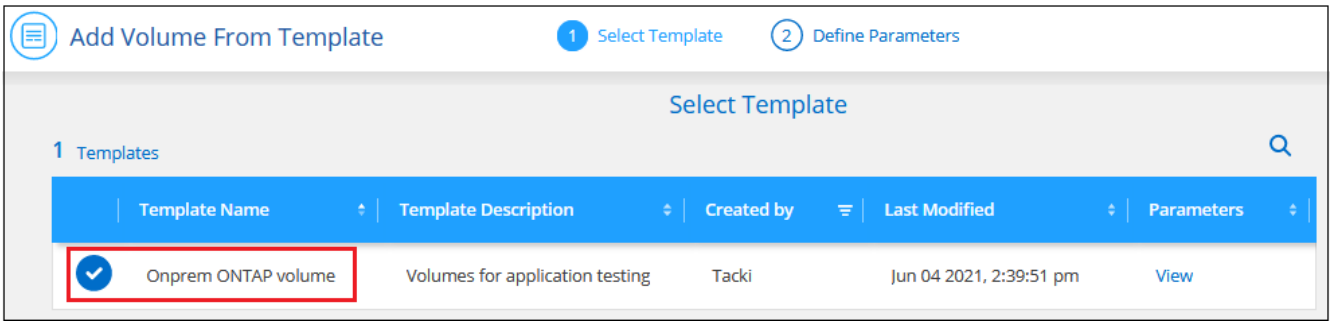
You can only create NFS or CIFS volumes when using templates.

Steps

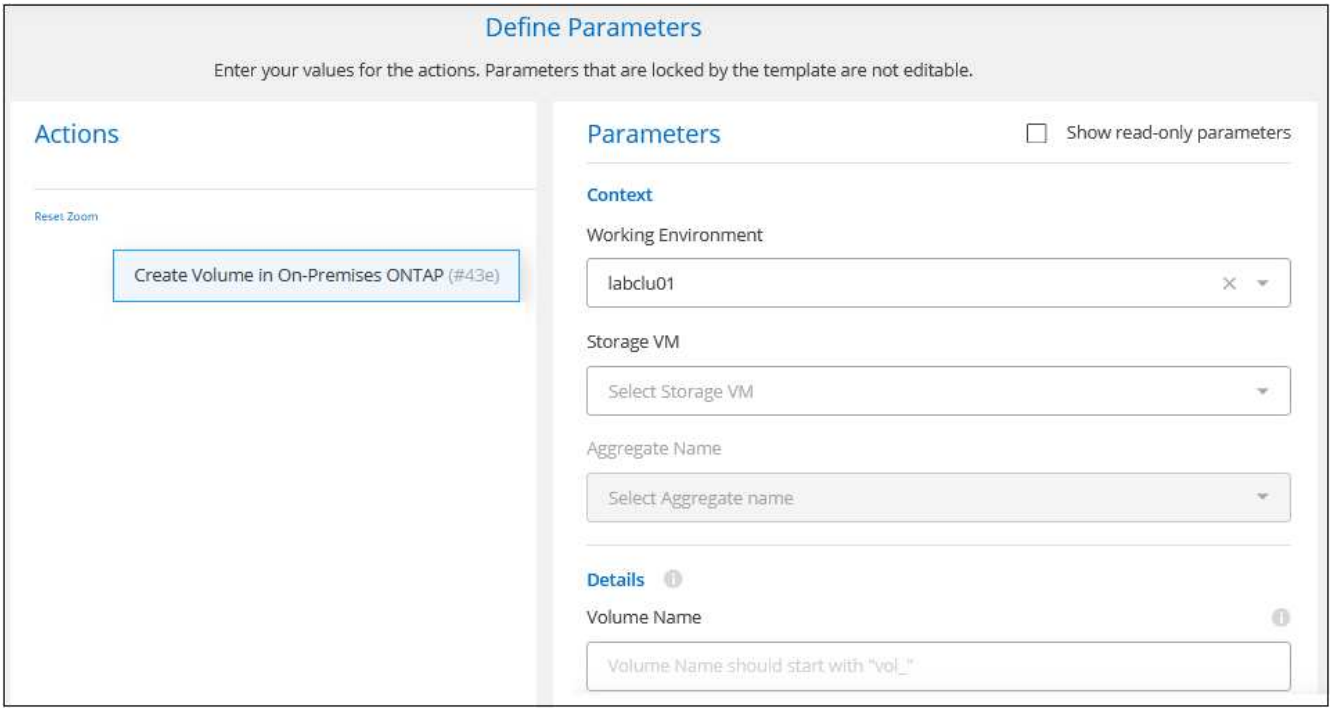
1. On the Canvas page, click the name of the on-premises ONTAP system on which you want to provision a volume.
2. Click > **Add Volume From Template**.



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.

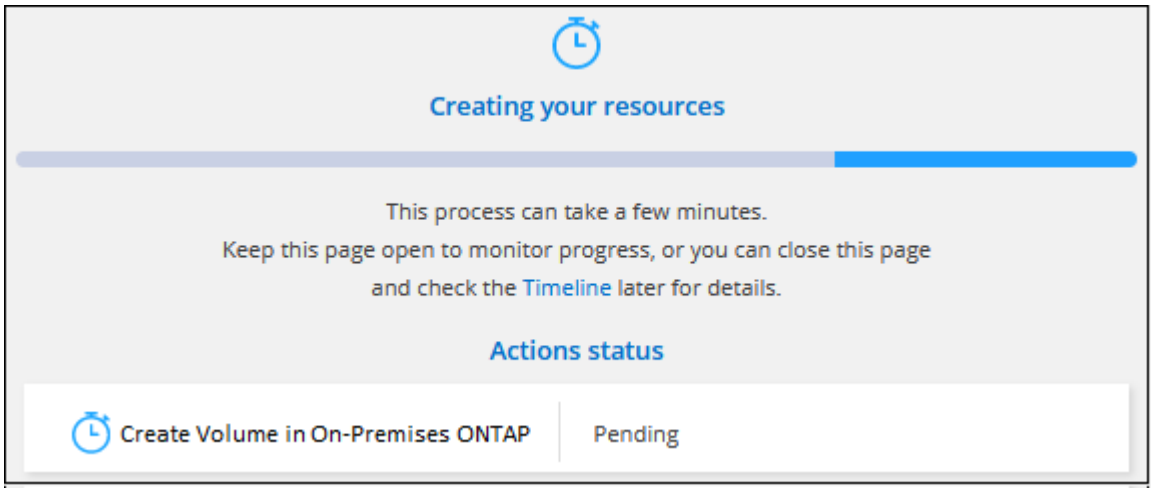


Note: You can click the checkbox **Show read-only parameters** to show all the fields that have been locked by the template if you want to see the values for those parameters. By default these predefined fields are hidden and only the fields you need to complete are shown.

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 Cloud Backup. This service provides backup and restore capabilities for protection and long-term archive of your on-prem and cloud data.

Click here for more details.

Scan, map, and classify your data

Cloud Data Sense can scan your corporate on-premises clusters to map and classify data, and to identify

private information. This can help reduce your security and compliance risk, decrease storage costs, and assist with your data migration projects.

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 using Cloud Tiering.

Click here for more details.

Optimize your clusters using Active IQ Digital Advisor

Active IQ Digital Advisor is integrated into the Cloud Manager UI so that you can optimize the operations, security, and performance of your ONTAP clusters in a single pane of glass.

Features

You can view the overall status of your storage system, high-level information about the wellness of the system, inventory, planning, upgrades, and valuable insights at a watchlist level using Active IQ Digital Advisor.

- Analyze and optimize the health of your storage systems
- Gain insights regarding all the risks to your storage systems and the actions to mitigate the risks
- Analyze the performance of your storage devices by viewing the graphical format of performance data
- Get details about systems that have exceeded 90% capacity or are nearing 90% capacity
- Get information about the hardware and software that have expired or are near-expiration within the next 6 months
- Upgrade your storage system software, and update your ONTAP firmware using Ansible

Supported ONTAP systems

Active IQ Digital Advisor provides information for all the on-premises ONTAP systems and Cloud Volumes ONTAP systems within your NSS account.

Cost

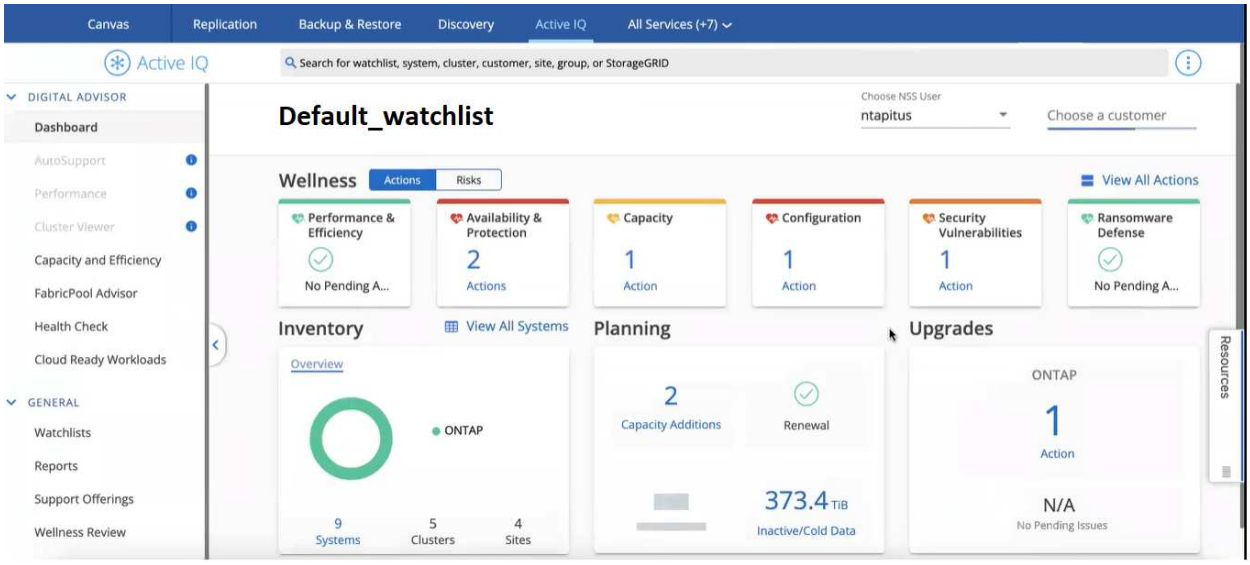
There's no cost to use this service through Cloud Manager.

How Active IQ Digital Advisor works with Cloud Manager

The Active IQ Digital Advisor user interface is completely integrated in Cloud Manager.

In Cloud Manager, click the **Active IQ** service.

- If you have already registered an existing NSS account in Cloud Manager, the Active IQ Digital Advisor UI appears just like you would see it in a standalone implementation at https://activeiq.netapp.com/.



- If you haven't registered an NSS account in Cloud Manager, register an NSS account now and then the Active IQ Digital Advisor UI appears.

> As of December 3, 2021, NetApp has switched to a new methodology of registering credentials for NSS accounts. See this FAQ for details. If your NSS account uses the old set of credentials you will need to update the account to the new credentials.

What's next

See the Active IQ Digital Advisor documentation for details.

Using Active IQ data to manage ONTAP clusters

The Discovery 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 node-based licenses

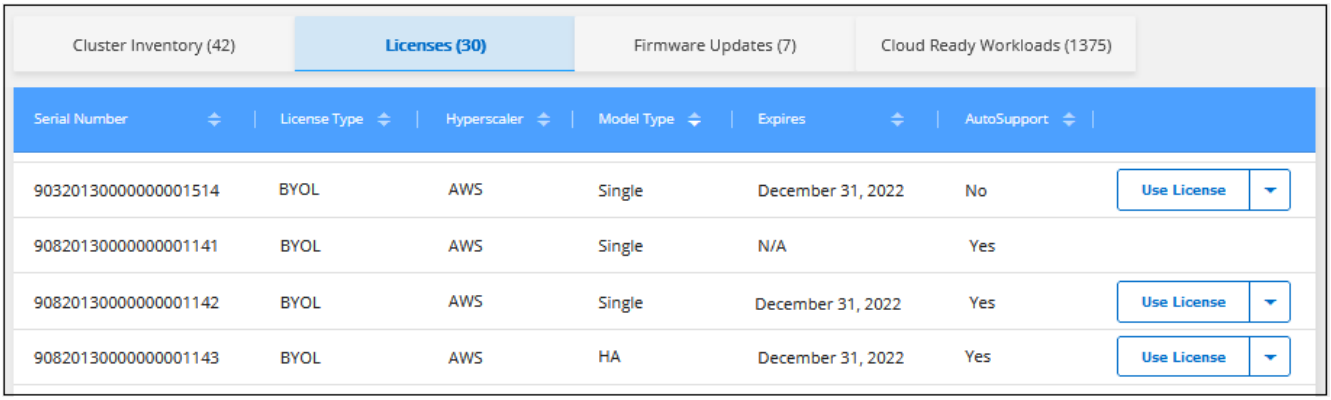
Many on-premises ONTAP storage system packages that you purchased included a free Cloud Volumes ONTAP node-based license so you can try the NetApp cloud storage offerings in Cloud Manager. You can use the license to create a new Cloud Volumes ONTAP instance, or you can apply the license to an existing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

> The term for a node-based license starts on the first day of the next month after the license was issued. For example, if you obtain a node-based BYOL license on Dec 15, 2021, the license term starts on Jan 1, 2022 (the first day of the next month).

Steps

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



   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

Column	Values
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.

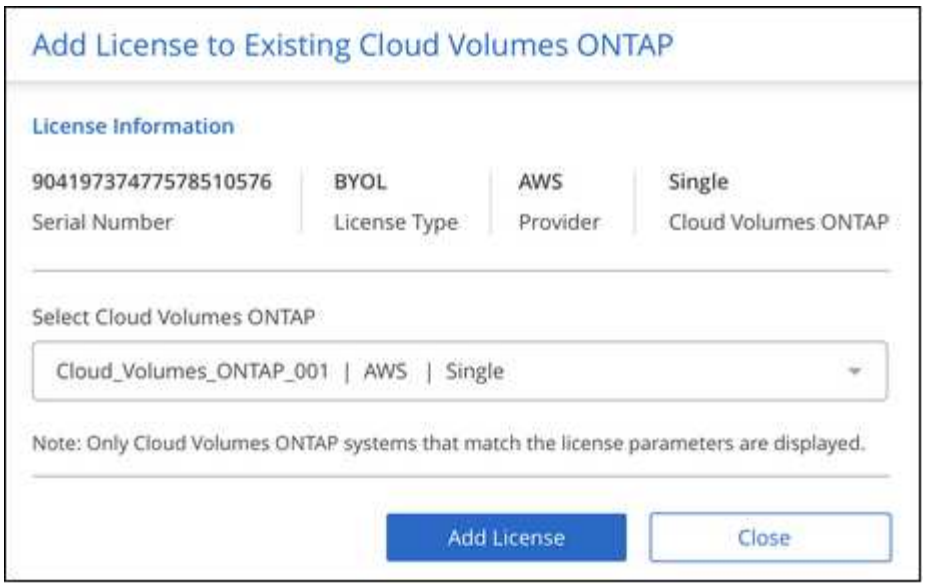
   - Launching Cloud Volumes ONTAP in Azure
   - Launching Cloud Volumes ONTAP in AWS
   - Launching Cloud Volumes ONTAP in GCP

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.

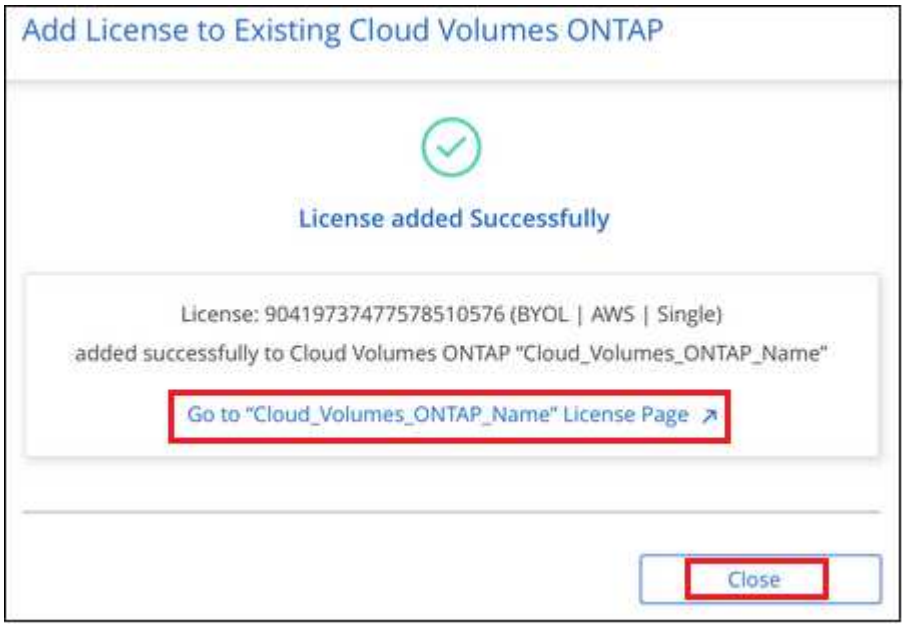
Steps

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



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.



3. You can click **Close** to close the window and return to the Discovery 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.

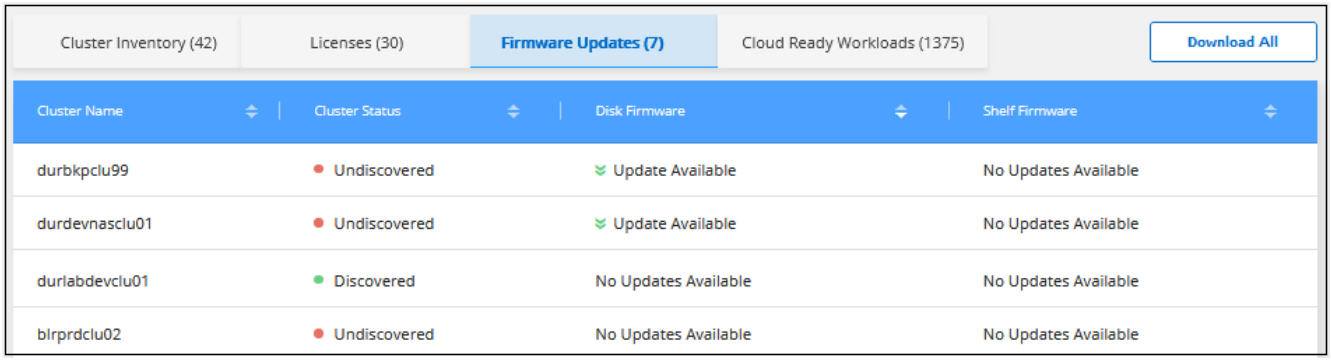
Downloading new disk and shelf firmware

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 Discovery page, click the **Firmware Updates** tab.



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

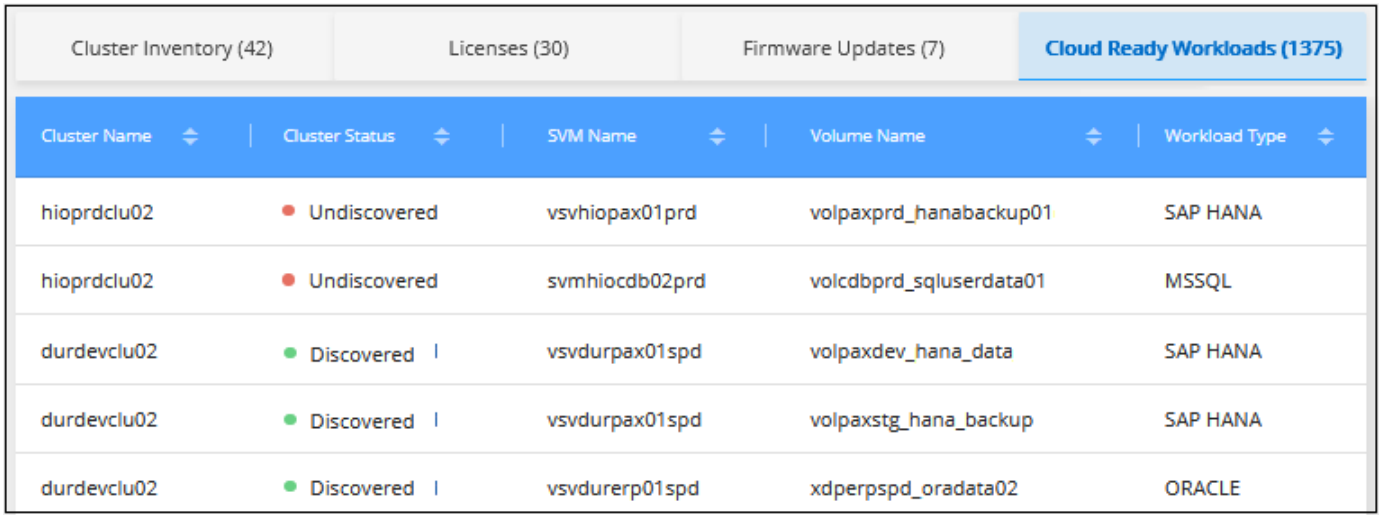
2. Click **Download All** and save the zip file.
3. Unzip the zip file and see the following instructions to update your storage system firmware.

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.



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.

Connecting to on-premises ONTAP systems

If you need to perform advanced management of on-premises ONTAP systems, you can do so using ONTAP System Manager or the command line interface.

Connect to System Manager

You might need to perform some on-premises ONTAP tasks from System Manager, which is a browser-based management tool that runs on the cluster.

Before you begin

The computer from which you are accessing Cloud Manager must have a network connection to the on-prem ONTAP system. For example, you might need to log in to Cloud Manager from a jump host that's in your on-premises network.

Steps

1. From the Canvas page, double-click the on-prem ONTAP system that you want to manage with System Manager.
2. Click the menu icon, and then click **System Manager**.
3. Click **Launch**.

   System Manager loads in a new browser tab.

4. At the login screen, enter the user name and password for the admin user that you specified when you created the cluster, and then click **Sign In**.

Result

The System Manager console loads. You can now use it to manage the on-prem ONTAP system.

Connect to the ONTAP CLI

The ONTAP CLI enables you to run all administrative commands and is a good choice for advanced tasks or if you're more comfortable using the CLI. You can connect to the CLI using Secure Shell (SSH).

Before you begin

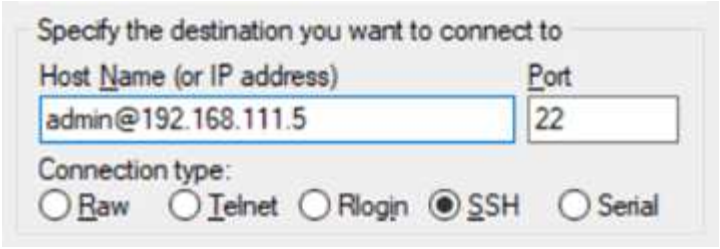
The host from which you use SSH to connect to the on-prem ONTAP system must have a network connection to the on-prem ONTAP system. For example, you might need to use SSH from a jump host in your on-premises network.

Steps

1. In Cloud Manager, identify the IP address of the cluster management interface:
   a. On the Canvas page, select the on-premises ONTAP system.
   b. Click in the right pane and copy the cluster management IP address.
2. Use SSH to connect to the cluster management interface IP address using the admin account.

   Example

   The following image shows an example using PuTTY:



3. At the login prompt, enter the password for the admin account.

Example

```
Password: ********
ONTAP2::>
```

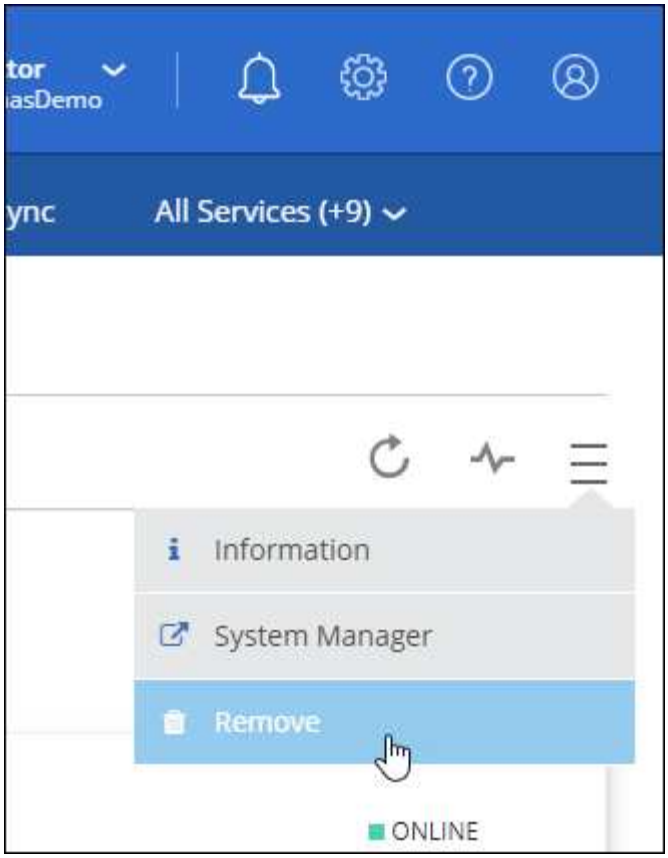
Remove an on-prem ONTAP working environment

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.