NetApp

Administer

Cloud Manager

NetApp
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Administer

Manage licenses for Cloud Volumes ONTAP

The Digital Wallet page enables you to manage licenses for Cloud Volumes ONTAP from a single location. You can add new licenses and update existing licenses.

You can manage the following types of licenses for Cloud Volumes ONTAP:

- *Capacity-based licenses*, which enable you to pay for Cloud Volumes ONTAP per TiB of capacity.

  Contact NetApp Sales to purchase a capacity-based license.

- *Node-based licenses*, which are any of the following:
  - BYOL licenses purchased from NetApp.

    This includes Eval licenses that you can later convert to BYOL licenses.

    To get started with a node-based BYOL, contact NetApp Sales.

  - Hourly pay-as-you-go (PAYGO) subscriptions from your cloud provider's marketplace.

    This includes 30-day free trials.

    To get started with PAYGO, create a Cloud Volumes ONTAP working environment and subscribe to your cloud provider's marketplace when prompted.

Learn more about Cloud Volumes ONTAP licenses.

Manage capacity-based licenses

Manage your capacity-based licenses to ensure that your NetApp account has enough capacity for your Cloud Volumes ONTAP systems.

View your account's capacity

View the licensed capacity and provisioned capacity by package to ensure that you have enough room for your data volumes.

Steps
1. Click **All Services > Digital Wallet > Capacity-Based Licenses**.
2. View the licensed capacity and provisioned capacity for each package.
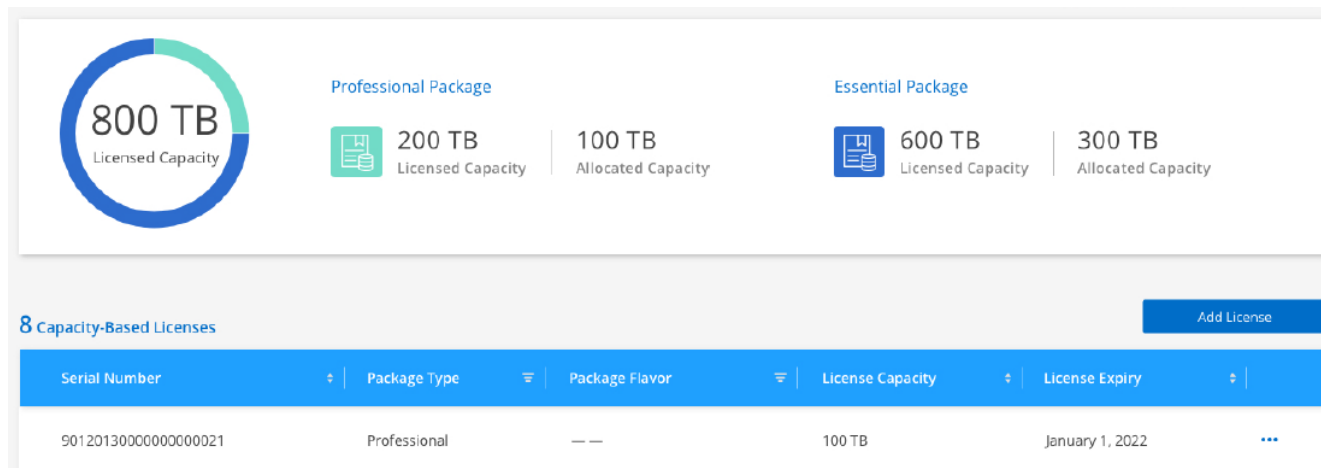
3. If needed, purchase additional licensed capacity and then add the license to your account.

Add purchased licenses to your account

After you purchase licenses for your NetApp account, you need to add the licenses to Cloud Manager so that the capacity is available for Cloud Volumes ONTAP.

What you'll need

- You need to provide Cloud Manager the serial number of the license or the license file.
- If you want to enter the serial number, you first need to add your NetApp Support Site account to Cloud Manager. This is the NetApp Support Site account that's authorized to access the serial number.

Steps

1. Click **All Services > Digital Wallet > Capacity-Based Licenses**.
2. Click **Add License**.
3. Enter the serial number for your capacity-based license or upload the license file.

   If you entered a serial number, you also need to select the NetApp Support Site account that's authorized to access the serial number.

4. Click **Add License**.

Update a capacity-based license

If you purchased additional capacity or extended the term of your license, then you'll need to update the license in Cloud Manager.

What you'll need

The license file (or *files* if you have an HA pair).

Steps

1. Click **All Services > Digital Wallet > Capacity-Based Licenses**.
2. Click the action menu next to the license and select **Update License**.
3. Upload the license file.
4. Click **Upload License**.

Remove a capacity-based license

If a capacity-based license expired and is no longer in use, then you can remove it at any time.

Steps

1. Click **All Services > Digital Wallet > Capacity-Based Licenses**.
2. Click the action menu next to the license and select **Remove License**.
3. Click **Remove** to confirm.

Manage node-based PAYGO licenses

The Digital Wallet page enables you to view details about each of your PAYGO Cloud Volumes ONTAP systems, including the serial number and PAYGO license type.

Steps

1. Click **All Services > Digital Wallet > Node-Based Licenses**.
2. Click **PAYGO**.
3. View details in the table about each of your PAYGO licenses.
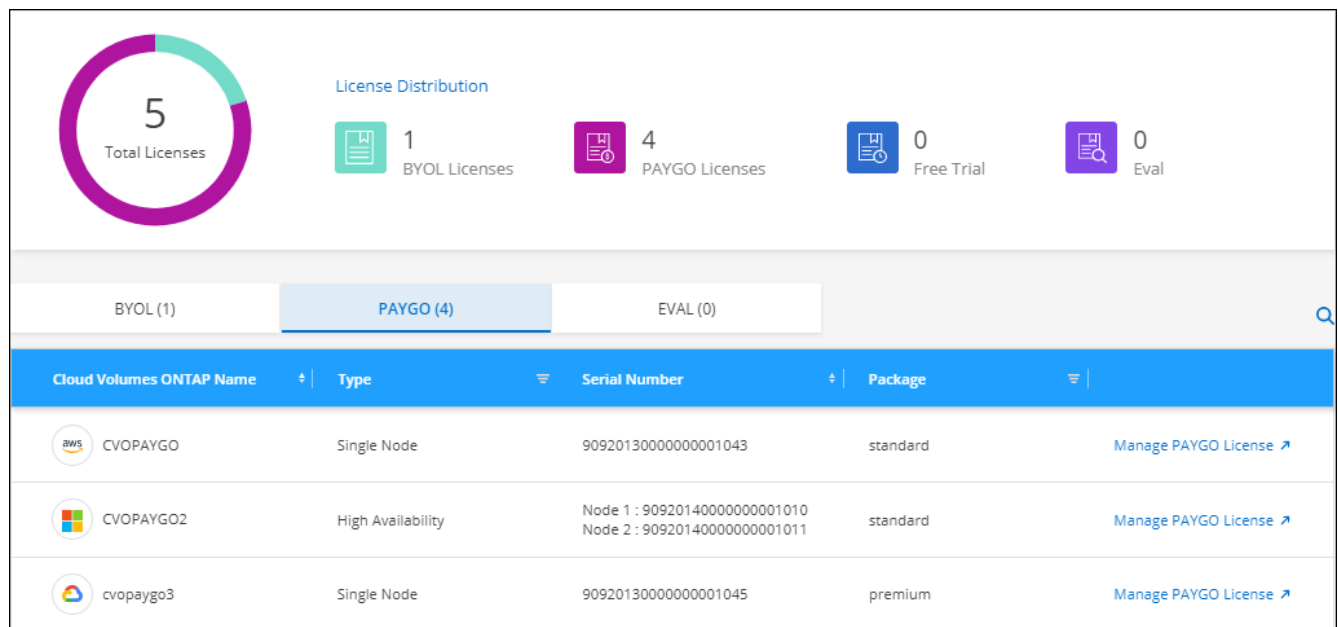
4. If needed, click **Manage PAYGO License** to change the PAYGO license or to change the instance type.

Manage node-based BYOL licenses

Manage your node-based licenses to ensure that each Cloud Volumes ONTAP system has a valid license with the required capacity.

Obtain a system license file

In most cases, Cloud Manager can automatically obtain your license file using your NetApp Support Site account. But if it can't, then you'll need to manually upload the license file. If you don't have the license file, you can obtain it from netapp.com.

Steps

1. Go to the [NetApp License File Generator](#) and log in using your NetApp Support Site credentials.

2. Enter your password, choose your product, enter the serial number, confirm that you have read and accepted the privacy policy, and then click **Submit**.

   Example

3. Choose whether you want to receive the serialnumber.NLF JSON file through email or direct download.

Update a system license

When you renew a BYOL subscription by contacting a NetApp representative, Cloud Manager automatically obtains the new license from NetApp and installs it on the Cloud Volumes ONTAP system.

If Cloud Manager can't access the license file over the secure internet connection, you can obtain the file yourself and then manually upload the file to Cloud Manager.

Steps

1. Click **All Services > Digital Wallet > Node-Based Licenses**.

2. In the **BYOL** tab, expand the details for a Cloud Volumes ONTAP system.

3. Click the action menu next to the system license and select **Update License**.

4. Upload the license file (or files if you have an HA pair).

5. Click **Update License**.

Result

Cloud Manager updates the license on the Cloud Volumes ONTAP system.

Manage extra capacity licenses

You can purchase extra capacity licenses for a Cloud Volumes ONTAP BYOL system to allocate more than the 368 TB of capacity that's provided with a BYOL system license. For example, you might purchase one extra license capacity to allocate up to 736 TB of capacity to Cloud Volumes ONTAP. Or you could purchase three extra capacity licenses to get up to 1.4 PB.

The number of licenses that you can purchase for a single node system or HA pair is unlimited.

Add capacity licenses

Purchase an extra capacity license by contacting us through the chat icon in the lower-right of Cloud Manager. After you purchase the license, you can apply it to a Cloud Volumes ONTAP system.

Steps

1. Click **All Services > Digital Wallet > Node-Based Licenses**.

2. In the **BYOL** tab, expand the details for a Cloud Volumes ONTAP system.

3. Click **Add Capacity License**.

4. Enter the serial number or upload the license file (or files if you have an HA pair).

5. Click **Add Capacity License**.

Update capacity licenses

If you extended the term of an extra capacity license, you'll need to update the license in Cloud Manager.

Steps

1. Click **All Services > Digital Wallet > Node-Based Licenses**.

2. In the **BYOL** tab, expand the details for a Cloud Volumes ONTAP system.

3. Click the action menu next to the capacity license and select **Update License**.

4. Upload the license file (or files if you have an HA pair).

5. Click **Update License**.

Remove capacity licenses

If an extra capacity license expired and is no longer in use, then you can remove it at any time.

Steps

1. Click **All Services > Digital Wallet > Node-Based Licenses**.

2. In the **BYOL** tab, expand the details for a Cloud Volumes ONTAP system.

3. Click the action menu next to the capacity license and select **Remove License**.

4. Click **Remove**.

Convert an Eval license to BYOL

An evaluation license is good for 30 days. You can apply a new BYOL license on top of the evaluation license for an in-place upgrade (this requires a restart of single node systems).

Learn more about Evaluation licenses.

Steps

1. Click **All Services > Digital Wallet > Node-Based Licenses**.

2. Click **Eval**.

3. In the table, click **Convert to BYOL License** for a Cloud Volumes ONTAP system.

4. Enter the serial number or upload the license file.

5. Click **Convert License**.

Registering pay-as-you-go systems

Support from NetApp is included with Cloud Volumes ONTAP Explore, Standard, and Premium systems, but you must first activate support by registering the systems with NetApp.

Registering a PAYGO system with NetApp is required to upgrade ONTAP software using any of the methods described on this page.

> A system that isn't registered for support will still receive the software update notifications that appear in Cloud Manager when a new version is available. But you will need to register the system before you can upgrade the software.

Steps

1. If you have not yet added your NetApp Support Site account to Cloud Manager, go to **Account Settings** and add it now.

   Learn how to add NetApp Support Site accounts.

2. On the Canvas page, double-click the name of the system that you want to register.

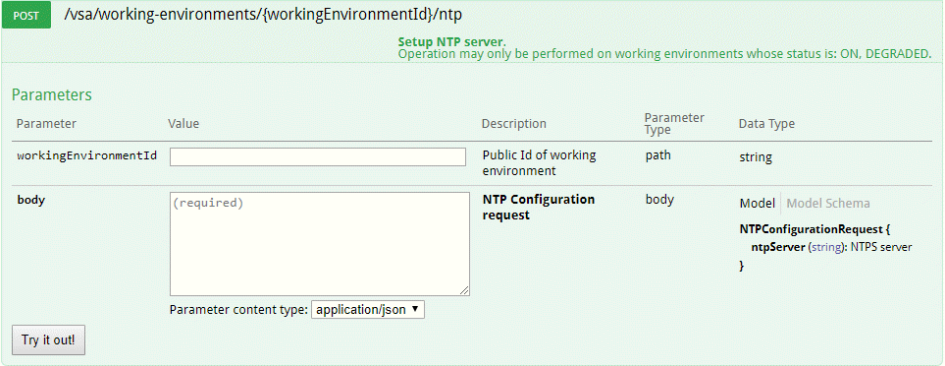3. Click the menu icon and then click **Support registration**:
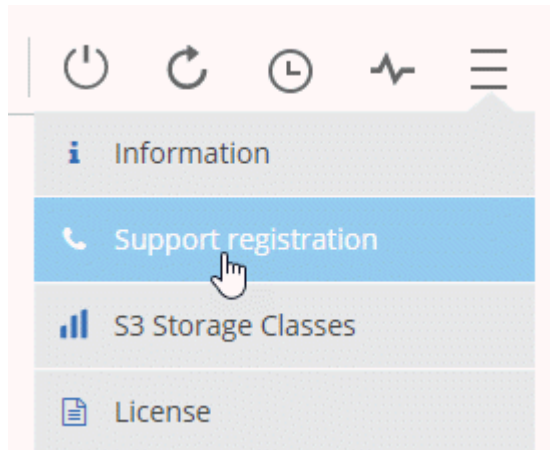
4. Select a NetApp Support Site account and click **Register**.

Result

Cloud Manager registers the system with NetApp.

Setting up Cloud Volumes ONTAP

After you deploy Cloud Volumes ONTAP, you can set it up by synchronizing the system time using NTP and by performing a few optional tasks from either System Manager or the CLI.

Task	Description
Synchronize the system time using NTP	Specifying an NTP server synchronizes the time between the systems in your network, which can help prevent issues due to time differences. Specify an NTP server using the Cloud Manager API or from the user interface when you set up a CIFS server. • Modifying the CIFS server • Cloud Manager automation docs For example, here's the API for a single-node system in AWS: **POST** /vsa/working-environments/{workingEnvironmentId}/ntp Setup NTP server. Operation may only be performed on working environments whose status is: ON, DEGRADED. Parameters | Parameter	Value	Description	Parameter Type	Data Type
workingEnvironmentId		Public Id of working environment	path	string

body	(required)	NTP Configuration request	body	Model | Model Schema
				NTPConfigurationRequest {
				ntpServer (string): NTPS server
				}
					
					Parameter content type: application/json
					
					Try it out!

Optional: Configure AutoSupport	AutoSupport proactively monitors the health of your system and automatically sends messages to NetApp technical support by default. If the Account Admin added a proxy server to Cloud Manager before you launched your instance, Cloud Volumes ONTAP is configured to use that proxy server for AutoSupport messages. You should test AutoSupport to ensure that it can send messages. For instructions, see the System Manager Help or the ONTAP 9 System Administration Reference.
Optional: Configure the Cloud Manager Connector as the AutoSupport proxy	If your environment requires a proxy server to send AutoSupport messages, you can configure the Connector to act as the proxy. No configuration for the Connector is required, other than internet access. You simply need to go to the CLI for Cloud Volumes ONTAP and run the following command: ``` system node autosupport modify -proxy-url <connector-ip-address> ```
Optional: Configure EMS	The Event Management System (EMS) collects and displays information about events that occur on Cloud Volumes ONTAP systems. To receive event notifications, you can set event destinations (email addresses, SNMP trap hosts, or syslog servers) and event routes for a particular event severity. You can configure EMS using the CLI. For instructions, see the ONTAP 9 EMS Configuration Express Guide.

Task	Description
Optional: Change the backup location of configuration files	Cloud Volumes ONTAP automatically creates configuration backup files that contain information about the configurable options that it needs to operate properly. By default, Cloud Volumes ONTAP backs up the files to the Connector host every eight hours. If you want to send the backups to an alternate location, you can change the location to an FTP or HTTP server in your data center or in AWS. For example, you might already have a backup location for your FAS storage systems. You can change the backup location using the CLI. See the ONTAP 9 System Administration Reference.

Upgrading Cloud Volumes ONTAP software

Cloud Manager includes several options that you can use to upgrade to the current Cloud Volumes ONTAP release. You should prepare Cloud Volumes ONTAP systems before you upgrade the software.

Requirements

You should be aware of the following requirements before you start the Cloud Volumes ONTAP upgrade process.

Software upgrades must be completed by Cloud Manager

Upgrades of Cloud Volumes ONTAP must be completed from Cloud Manager. You should not upgrade Cloud Volumes ONTAP by using System Manager or the CLI. Doing so can impact system stability.

Cloud Volumes ONTAP must be registered with NetApp Support

Cloud Volumes ONTAP must be registered with NetApp support in order to upgrade the software using any of the methods described on this page. This applies to both PAYGO and BYOL. You'll need to manually register PAYGO systems, while BYOL systems are registered by default.

> A system that isn't registered for support will still receive the software update notifications that appear in Cloud Manager when a new version is available. But you will need to register the system before you can upgrade the software.

A note about downgrades

Cloud Manager doesn't support downgrading Cloud Volumes ONTAP to a previous version. Contact NetApp technical support for help with downgrades.

Ways to upgrade Cloud Volumes ONTAP

Cloud Manager displays a notification in Cloud Volumes ONTAP working environments when a new version of Cloud Volumes ONTAP is available:
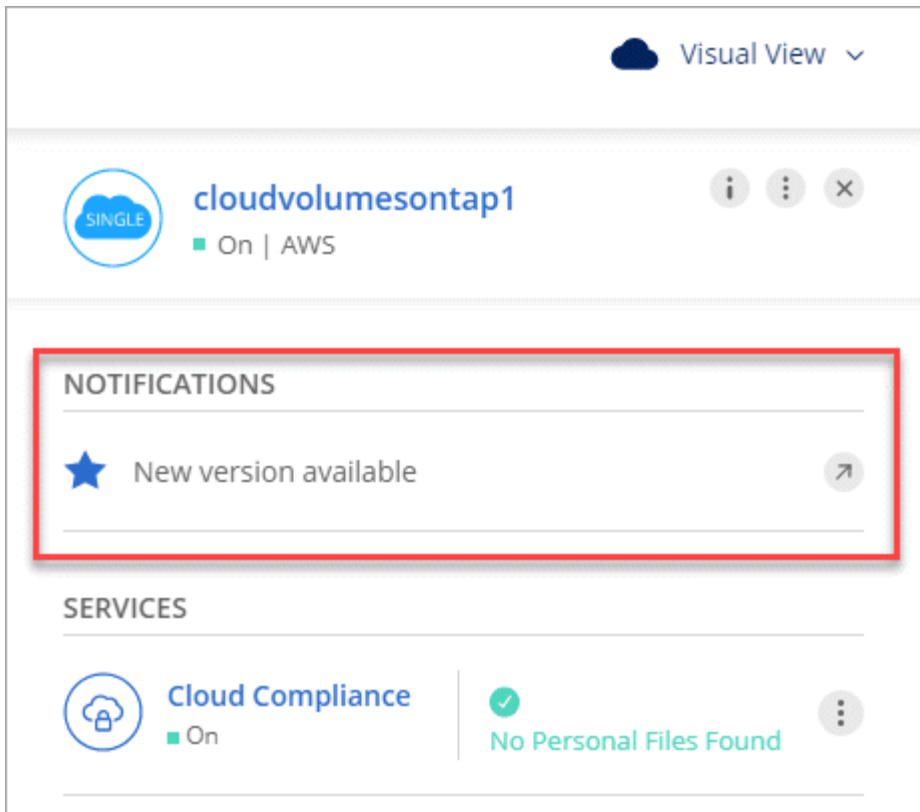
You can start the upgrade process from this notification, which automates the process by obtaining the software image from an S3 bucket, installing the image, and then restarting the system. For details, see Upgrading Cloud Volumes ONTAP from Cloud Manager notifications.

> For HA systems in AWS, Cloud Manager might upgrade the HA mediator as part of the upgrade process.

Cloud Manager also provides the following advanced options for upgrading Cloud Volumes ONTAP software with both PAYGO and BYOL:

- Software upgrades using an image on an external URL

  This option is helpful if Cloud Manager can't access the S3 bucket to upgrade the software or if you were provided with a patch.

  For details, see Upgrading Cloud Volumes ONTAP by using an HTTP or FTP server.

- Software upgrades using the alternate image on the system

  You can use this option to upgrade by making the alternate software image the default image. This option is not available for HA pairs.

  For details, see Upgrading Cloud Volumes ONTAP by using a local image.

Preparing to upgrade Cloud Volumes ONTAP software

Before performing an upgrade, you must verify that your systems are ready and make any required configuration changes.

- Understanding supported upgrade paths
- Planning for downtime
- Verifying that automatic giveback is still enabled
- Suspending SnapMirror transfers
- Verifying that aggregates are online

Understanding supported upgrade paths

Refer to the "Upgrade notes" page in the Cloud Volumes ONTAP Release Notes for the target version.

Planning for downtime

When you upgrade a single-node system, the upgrade process takes the system offline for up to 25 minutes, during which I/O is interrupted.

Upgrading an HA pair is nondisruptive and I/O is uninterrupted. During this nondisruptive upgrade process, each node is upgraded in tandem to continue serving I/O to clients.

Verifying that automatic giveback is still enabled

Automatic giveback must be enabled on a Cloud Volumes ONTAP HA pair (this is the default setting). If it isn't, then the operation will fail.

ONTAP 9 Documentation: Commands for configuring automatic giveback

Suspending SnapMirror transfers

If a Cloud Volumes ONTAP system has active SnapMirror relationships, it is best to suspend transfers before you update the Cloud Volumes ONTAP software. Suspending the transfers prevents SnapMirror failures. You must suspend the transfers from the destination system.

> Even though Cloud Backup uses an implementation of SnapMirror to create backup files (called SnapMirror Cloud), backups do not need to be suspended when a system is upgraded.

About this task

These steps describe how to use System Manager for version 9.3 and later.

Steps

1. Log in to System Manager from the destination system.
2. Click **Protection > Relationships**.
3. Select the relationship and click **Operations > Quiesce**.

Verifying that aggregates are online

Aggregates for Cloud Volumes ONTAP must be online before you update the software. Aggregates should be online in most configurations, but if they are not, then you should bring them online.

About this task

These steps describe how to use System Manager for version 9.3 and later.

Steps

1. In the working environment, click the menu icon, and then click **Advanced > Advanced allocation**.

2. Select an aggregate, click **Info**, and then verify that the state is online.

3. If the aggregate is offline, use System Manager to bring the aggregate online:

   a. Log in to System Manager.

   b. Click **Storage > Aggregates & Disks > Aggregates**.

   c. Select the aggregate, and then click **More Actions > Status > Online**.

Upgrading Cloud Volumes ONTAP from Cloud Manager notifications

Cloud Manager notifies you when a new version of Cloud Volumes ONTAP is available. Click the notification to start the upgrade process.

Before you begin

Cloud Manager operations such as volume or aggregate creation must not be in progress for the Cloud Volumes ONTAP system.

Steps

1. Click **Canvas**.

2. Select a working environment.

   A notification appears in the right pane if a new version is available:
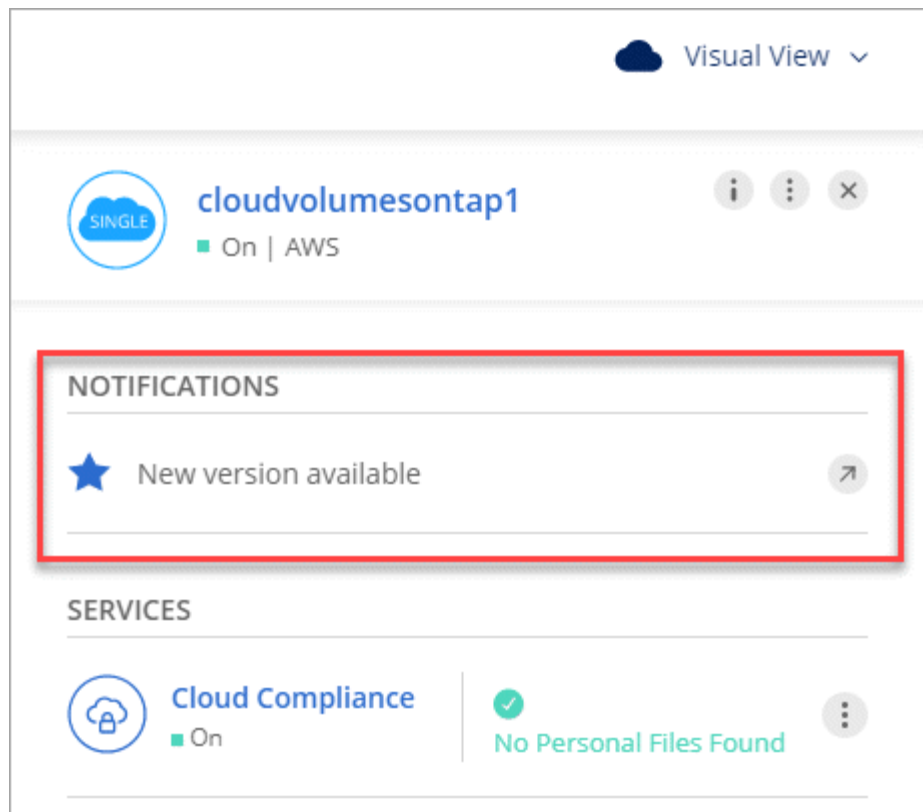
3. If a new version is available, click **Upgrade**.

4. In the Release Information page, click the link to read the Release Notes for the specified version, and then select the **I have read…** check box.

5. In the End User License Agreement (EULA) page, read the EULA, and then select **I read and approve the EULA**.

6. In the Review and Approve page, read the important notes, select **I understand…**, and then click **Go**.

Result

Cloud Manager starts the software upgrade. You can perform actions on the working environment once the software update is complete.

After you finish

If you suspended SnapMirror transfers, use System Manager to resume the transfers.

Upgrading Cloud Volumes ONTAP by using an HTTP or FTP server

You can place the Cloud Volumes ONTAP software image on an HTTP or FTP server and then initiate the software upgrade from Cloud Manager. You might use this option if Cloud Manager can't access the S3 bucket to upgrade the software.

Steps

1. Set up an HTTP server or FTP server that can host the Cloud Volumes ONTAP software image.

2. If you have a VPN connection to the virtual network, you can place the Cloud Volumes ONTAP software image on an HTTP server or FTP server in your own network. Otherwise, you must place the file on an HTTP server or FTP server in the cloud.

3. If you use your own security group for Cloud Volumes ONTAP, ensure that the outbound rules allow HTTP or FTP connections so Cloud Volumes ONTAP can access the software image.

> **ⓘ** The predefined Cloud Volumes ONTAP security group allows outbound HTTP and FTP connections by default.

4. Obtain the software image from the NetApp Support Site.

5. Copy the software image to the directory on the HTTP or FTP server from which the file will be served.

6. From the working environment in Cloud Manager, click the menu icon, and then click **Advanced > Update Cloud Volumes ONTAP**.

7. On the update software page, choose **Select an image available from a URL**, enter the URL, and then click **Change Image**.

8. Click **Proceed** to confirm.

Result

Cloud Manager starts the software update. You can perform actions on the working environment once the software update is complete.

After you finish

If you suspended SnapMirror transfers, use System Manager to resume the transfers.

Upgrading Cloud Volumes ONTAP by using a local image

Each Cloud Volumes ONTAP system can hold two software images: the current image that is running, and an alternate image that you can boot. Cloud Manager can change the alternate image to be the default image.

Steps

1. From the working environment, click the menu icon, and then click **Advanced > Update Cloud Volumes ONTAP**.

2. On the update software page, select the alternate image, and then click **Change Image**.

3. Click **Proceed** to confirm.

Result

Cloud Manager starts the software update. You can perform actions on the working environment once the software update is complete.

After you finish

If you suspended SnapMirror transfers, use System Manager to resume the transfers.

Modifying Cloud Volumes ONTAP systems

You might need to change the configuration of Cloud Volumes ONTAP systems as your storage needs change. For example, you can change between pay-as-you-go configurations, change the instance or VM type, and more.

Changing the instance or machine type for Cloud Volumes ONTAP

You can choose from several instance or machine types when you launch Cloud Volumes ONTAP in AWS, Azure, or GCP. You can change the instance or machine type at any time if you determine that it is undersized or oversized for your needs.

About this task

- Automatic giveback must be enabled on a Cloud Volumes ONTAP HA pair (this is the default setting). If it isn't, then the operation will fail.

  ONTAP 9 Documentation: Commands for configuring automatic giveback

- Changing the instance or machine type affects cloud provider service charges.

- The operation restarts Cloud Volumes ONTAP.

  For single node systems, I/O is interrupted.

  For HA pairs, the change is nondisruptive. HA pairs continue to serve data.

  > Cloud Manager gracefully changes one node at a time by initiating takeover and waiting for give back. NetApp's QA team tested both writing and reading files during this process and didn't see any issues on the client side. As connections changed, we did see retries on the I/O level, but the application layer overcame these short "re-wire" of NFS/CIFS connections.

Steps

1. From the working environment, click the menu icon, and then click **Change license or instance** for AWS, **Change license or VM** for Azure, or **Change license or machine** for GCP.

2. If you are using a pay-as-you-go configuration, you can optionally choose a different license.

3. Select an instance or machine type, select the check box to confirm that you understand the implications of the change, and then click **OK**.

Result

Cloud Volumes ONTAP reboots with the new configuration.

Changing between hourly (pay-as-you-go) configurations

After you launch an hourly, pay-as-you-go Cloud Volumes ONTAP system, you can change between the Explore, Standard, and Premium configurations at any time by modifying the license. Changing the license increases or decreases the raw capacity limit and enables you to choose from different instance or VM types.

About this task

Note the following about changing between pay-as-you-go licenses:

- The operation restarts Cloud Volumes ONTAP.

  For single node systems, I/O is interrupted.

  For HA pairs, the change is nondisruptive. HA pairs continue to serve data.

- Changing the instance or machine type affects cloud provider service charges.

Steps

1. From the working environment, click the menu icon, and then click **Change license or instance** for AWS, **Change license or VM** for Azure, or **Change license or machine** for GCP.

2. Select a license type and an instance type or machine type, select the check box to confirm that you understand the implications of the change, and then click **OK**.

Result

Cloud Volumes ONTAP reboots with the new license, instance type or machine type, or both.

Moving to an alternate Cloud Volumes ONTAP configuration

If you want to switch between a pay-by-the-hour (PAYGO) subscription, an annual contract (AWS only), or a BYOL subscription, then you need to create a new Cloud Volumes ONTAP working environment and then replicate data from the existing working environment to the new working environment. The same is true if you want to switch between a single Cloud Volumes ONTAP system and an HA pair.

Steps

1. Create a new Cloud Volumes ONTAP working environment.

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

2. Set up one-time data replication between the systems for each volume that you must replicate.

3. Terminate the Cloud Volumes ONTAP system that you no longer need by deleting the original working environment.

Changing write speed to normal or high

Cloud Manager enables you to choose a normal or high write speed for Cloud Volumes ONTAP. The default write speed is normal. You can change to high write speed if fast write performance is required for your workload.

High write speed is supported with all types of single node systems. It's also supported with HA pairs in AWS and Azure when using a specific instance or VM type (click here to see the list of supported instances and VM types). High write speed is not supported with HA pairs in GCP.

Before you change the write speed, you should understand the differences between the normal and high settings.

About this task

• Ensure that operations such as volume or aggregate creation are not in progress.

• Be aware that this change restarts Cloud Volumes ONTAP.

Steps

1. From the working environment, click the menu icon, and then click **Advanced > Writing Speed**.

2. Select **Normal** or **High**.

   If you choose High, then you'll need to read the "I understand…" statement and confirm by checking the box.

3. Click **Save**, review the confirmation message, and then click **Proceed**.
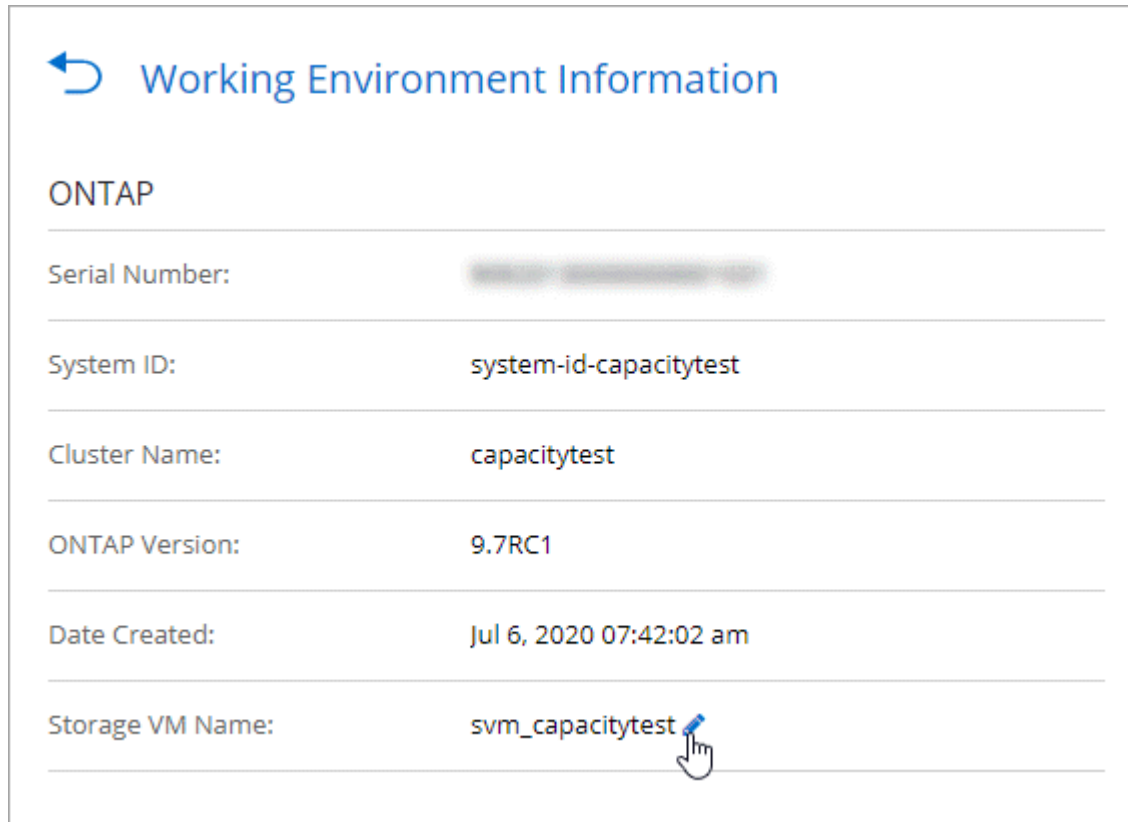
Modifying the storage VM name

Cloud Manager automatically names the single storage VM (SVM) that it creates for Cloud Volumes ONTAP. You can modify the name of the SVM if you have strict naming standards. For example, you might want the name to match how you name the SVMs for your ONTAP clusters.

But if you created any additional SVMs for Cloud Volumes ONTAP, then you can't rename the SVMs from Cloud Manager. You'll need to do so directly from Cloud Volumes ONTAP by using System Manager or the CLI.
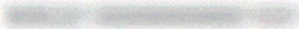
Steps

1. From the working environment, click the menu icon, and then click **Information**.

2. Click the edit icon to the right of the storage VM name.

3. In the Modify SVM Name dialog box, change the name, and then click **Save**.

Changing the password for Cloud Volumes ONTAP

Cloud Volumes ONTAP includes a cluster admin account. You can change the password for this account from Cloud Manager, if needed.

> You should not change the password for the admin account through System Manager or the CLI. The password will not be reflected in Cloud Manager. As a result, Cloud Manager cannot monitor the instance properly.

Steps

1. From the working environment, click the menu icon, and then click **Advanced > Set password**.

2. Enter the new password twice and then click **Save**.

   The new password must be different than one of the last six passwords that you used.

Changing route tables associated with HA pairs in multiple AWS AZs

You can modify the AWS route tables that include routes to the floating IP addresses for an HA pair. You might do this if new NFS or CIFS clients need to access an HA pair in AWS.

Steps

1. From the working environment, click the menu icon and then click **Information**.

2. Click **Route Tables**.

3. Modify the list of selected route tables and then click **Save**.

Result
Cloud Manager sends an AWS request to modify the route tables.

Managing the state of Cloud Volumes ONTAP

You can stop and start Cloud Volumes ONTAP from Cloud Manager to manage your cloud compute costs.

Scheduling automatic shutdowns of Cloud Volumes ONTAP

You might want to shut down Cloud Volumes ONTAP during specific time intervals to lower your compute costs. Rather than do this manually, you can configure Cloud Manager to automatically shut down and then restart systems at specific times.

About this task

- When you schedule an automatic shutdown of your Cloud Volumes ONTAP system, Cloud Manager postpones the shutdown if an active data transfer is in progress.

  Cloud Manager shuts down the system after the transfer is complete.

- This task schedules automatic shutdowns of both nodes in an HA pair.

- Snapshots of boot and root disks are not created when turning off Cloud Volumes ONTAP through scheduled shutdowns.

  Snapshots are automatically created only when performing a manual shutdown, as described in the next section.

Steps

1. From the working environment, click the clock icon:

2. Specify the shutdown schedule:

   a. Choose whether you want to shut down the system every day, every weekday, every weekend, or any combination of the three options.

   b. Specify when you want to turn off the system and for how long you want it turned off.

   Example

The following image shows a schedule that instructs Cloud Manager to shut down the system every Saturday at 12:00 a.m. for 48 hours. Cloud Manager restarts the system every Monday at 12:00 a.m.

3. Click **Save**.

Result

Cloud Manager saves the schedule. The clock icon changes to indicate that a schedule is set:

Stopping Cloud Volumes ONTAP

Stopping Cloud Volumes ONTAP saves you from accruing compute costs and creates snapshots of the root and boot disks, which can be helpful for troubleshooting.

> ℹ️ To reduce costs, Cloud Manager periodically deletes older snapshots of root and boot disks. Only the two most recent snapshots are retained for both the root and boot disks.

About this task

When you stop an HA pair, Cloud Manager shuts down both nodes.

Steps

1. From the working environment, click the **Turn off** icon.

2. Keep the option to create snapshots enabled because the snapshots can enable system recovery.
3. Click **Turn Off**.

   It can take up to a few minutes to stop the system. You can restart systems at a later time from the working environment page.

Monitoring AWS resource costs

Cloud Manager enables you to view the resource costs associated with running Cloud Volumes ONTAP in AWS. You can also see how much money you saved by using NetApp features that can reduce storage costs.

About this task

Cloud Manager updates the costs when you refresh the page. You should refer to AWS for final cost details.

Step

1. Verify that Cloud Manager can obtain cost information from AWS:

   a. Ensure that the IAM policy that provides Cloud Manager with permissions includes the following actions:

   ```
   "ce:GetReservationUtilization",
   "ce:GetDimensionValues",
   "ce:GetCostAndUsage",
   "ce:GetTags"
   ```

   These actions are included in the latest Cloud Manager policy. New systems deployed from NetApp Cloud Central automatically include these permissions.

   b. Activate the **WorkingEnvironmentId** tag.

   To track your AWS costs, Cloud Manager assigns a cost allocation tag to Cloud Volumes ONTAP instances. After you create your first working environment, activate the **WorkingEnvironmentId** tag. User-defined tags don't appear on AWS billing reports until you activate them in the Billing and Cost Management console.

2. On the Canvas page, select a Cloud Volumes ONTAP working environment and then click **Cost**.

   The Cost page displays costs for the current and previous months and shows your annual NetApp savings, if you enabled NetApp's cost-saving features on volumes.

   The following image shows a sample Cost page:
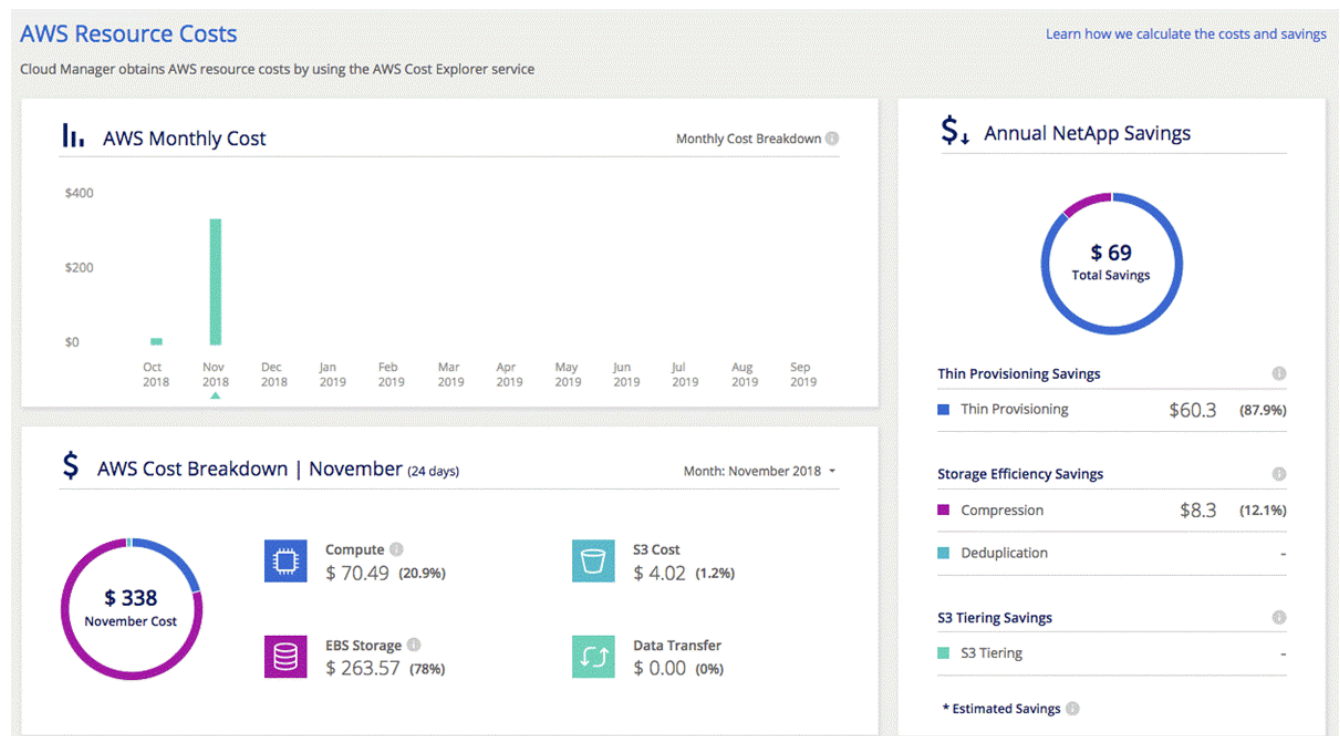
Connecting to Cloud Volumes ONTAP

If you need to perform advanced management of Cloud Volumes ONTAP, you can do so using OnCommand System Manager or the command line interface.

Connecting to System Manager

You might need to perform some Cloud Volumes ONTAP tasks from System Manager, which is a browser-based management tool that runs on the Cloud Volumes ONTAP system. For example, you need to use System Manager if you want to create LUNs.

Before you begin

The computer from which you are accessing Cloud Manager must have a network connection to Cloud Volumes ONTAP. For example, you might need to log in to Cloud Manager from a jump host that's in your cloud provider network.

> When deployed in multiple AWS Availability Zones, Cloud Volumes ONTAP HA configurations use a floating IP address for the cluster management interface, which means external routing is not available. You must connect from a host that is part of the same routing domain.

Steps

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

   System Manager loads in a new browser tab.

4. At the login screen, enter **admin** in the User Name field, enter the password that you specified when you created the working environment, and then click **Sign In**.

Result

The System Manager console loads. You can now use it to manage Cloud Volumes ONTAP.

Connecting to the Cloud Volumes ONTAP CLI

The Cloud Volumes ONTAP CLI enables you to run all administrative commands and is a good choice for advanced tasks or if you are 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 Cloud Volumes ONTAP must have a network connection to Cloud Volumes ONTAP. For example, you might need to use SSH from a jump host in AWS or Azure.
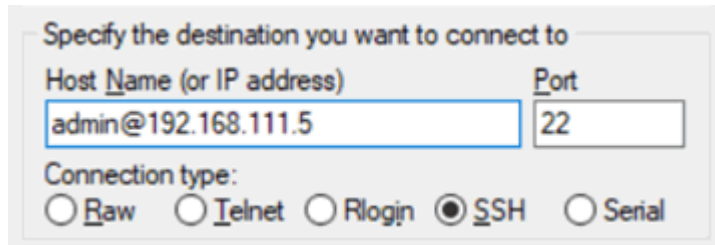
> When deployed in multiple AZs, Cloud Volumes ONTAP HA configurations use a floating IP address for the cluster management interface, which means external routing is not available. You must connect from a host that is part of the same routing domain.

Steps

1. In Cloud Manager, identify the IP address of the cluster management interface:

   a. On the Canvas page, select the Cloud Volumes ONTAP system.

   b. Copy the cluster management IP address that appears in the right pane.

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:

   ```
   Specify the destination you want to connect to
   Host Name (or IP address)              Port
   admin@192.168.111.5                    22
   Connection type:
   ○ Raw   ○ Telnet  ○ Rlogin  ⦿ SSH   ○ Serial
   ```

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

   Example

   ```
   Password:  ********
   COT2::>
   ```

Adding existing Cloud Volumes ONTAP systems to Cloud Manager

You can discover and add existing Cloud Volumes ONTAP systems to Cloud Manager. You might do this if you deployed a new Cloud Manager system.

Before you begin
You must know the password for the Cloud Volumes ONTAP admin user account.

Steps
1. On the Canvas page, click **Add Working Environment**.

2. Select the cloud provider in which the system resides.

3. Choose the type of Cloud Volumes ONTAP system.

4. Click the link to discover an existing system.

5. On the Region page, choose the region where the instances are running, and then select the instances.

6. On the Credentials page, enter the password for the Cloud Volumes ONTAP admin user, and then click **Go**.

Result

Cloud Manager adds the Cloud Volumes ONTAP instances to the workspace.

Overriding CIFS locks for Cloud Volumes ONTAP HA in Azure

The Account Admin can enable a setting in Cloud Manager that prevents issues with Cloud Volumes ONTAP storage failover during Azure maintenance events. When you enable this setting, Cloud Volumes ONTAP vetoes CIFS locks and resets active CIFS sessions.

About this task

Microsoft Azure schedules periodic maintenance events on its virtual machines. When a maintenance event occurs on a node in a Cloud Volumes ONTAP HA pair, the HA pair initiates storage takeover. If there are active CIFS sessions during this maintenance event, the locks on CIFS files can prevent storage failover.

If you enable this setting, Cloud Volumes ONTAP will veto the locks and reset the active CIFS sessions. As a result, the HA pair can complete storage failover during these maintenance events.

> ❗ This process might be disruptive to CIFS clients. Data that is not committed from CIFS clients could be lost.

What you'll need

You need to create a Connector before you can change Cloud Manager settings. Learn how.

Steps

1. In the upper right of the Cloud Manager console, click the Settings icon, and select **Connector Settings**.

2. Under **Azure**, click **Azure CIFS locks for Azure HA working environments**.

3. Click the checkbox to enable the feature and then click **Save**.

Using an Azure Private Link with Cloud Volumes ONTAP

By default, Cloud Manager enables an Azure Private Link connection between Cloud Volumes ONTAP and its associated storage accounts. A Private Link secures connections between endpoints in Azure and provides performance benefits. Learn more.

In most cases, there's nothing that you need to do—Cloud Manager manages the Azure Private Link for you. But if you use Azure Private DNS, then you'll need to edit a configuration file. You can also disable the Private Link connection, if desired.

How Private Link connections work with Cloud Volumes ONTAP

When Cloud Manager deploys Cloud Volumes ONTAP in Azure, it creates a private endpoint in the resource group. The private endpoint is associated with the storage account for Cloud Volumes ONTAP. As a result, access to Cloud Volumes ONTAP storage travels through the Microsoft backbone network.

Client access goes through the private link when clients are within the same VNet as Cloud Volumes ONTAP, within peered VNets, or in your on-premises network when using a private VPN or ExpressRoute connection to the VNet.

Here's an example that shows client access over a private link from within the same VNet and from an on-prem network that has either a private VPN or ExpressRoute connection.
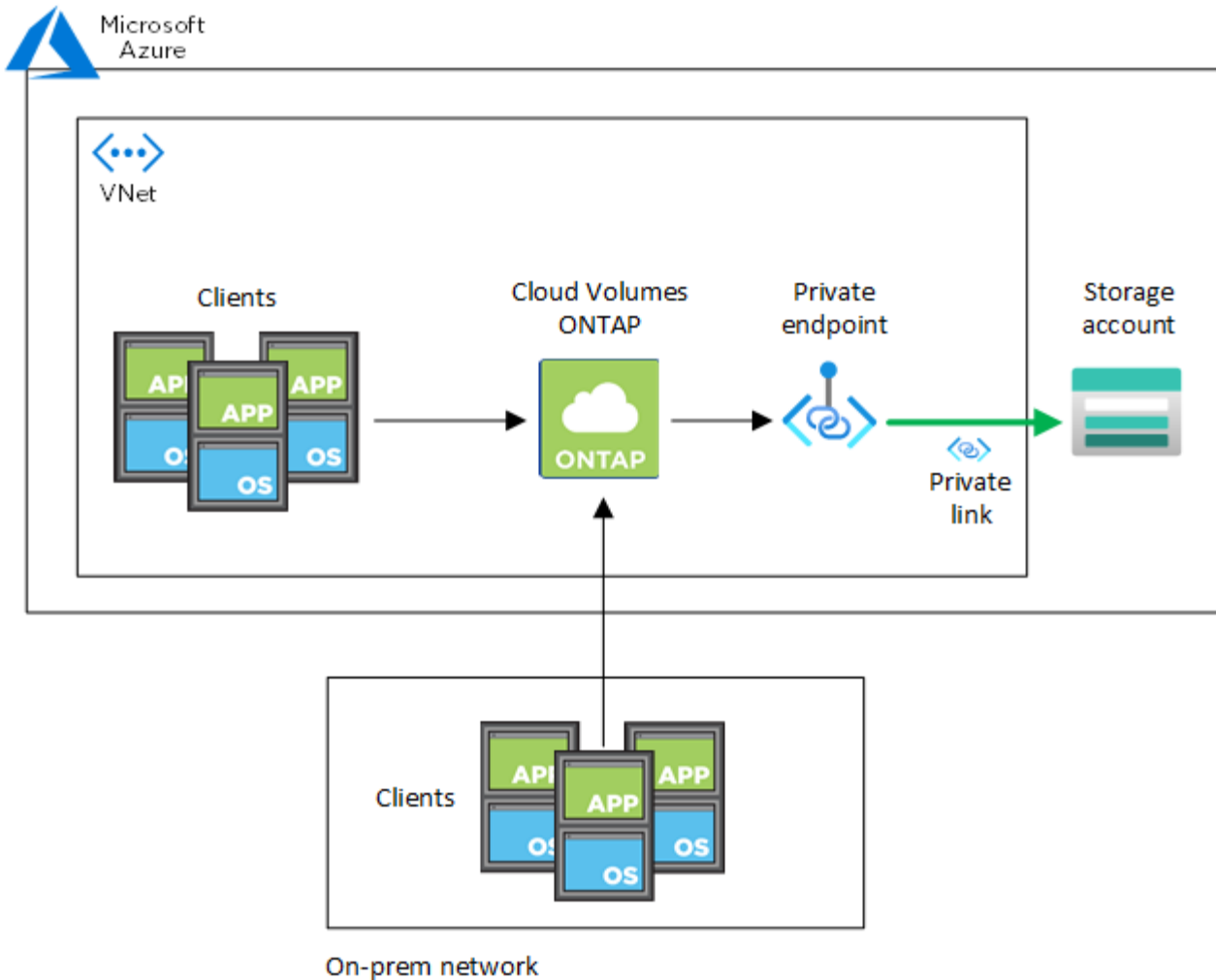
Providing Cloud Manager with details about your Azure Private DNS

If you use Azure Private DNS, then you need to modify a configuration file on each Connector. Otherwise, Cloud Manager can't enable the Azure Private Link connection between Cloud Volumes ONTAP and its associated storage accounts.

Note that the DNS name must match Azure DNS naming requirements as shown in Azure documentation.

Steps

1. SSH to the Connector host and log in.

2. Navigate to the following directory: /opt/application/netapp/cloudmanager/docker_occm/data

3. Edit app.conf by modifying the following parameter as shown:

```
"user-private-dns-zone-settings": {
    "use-existing": true,
    "resource-group": "<resource group name of the DNS zone>"
  }
```

4. Save the file and log off the Connector.

A reboot isn't required.

Disabling Azure Private Link connections

If required for your Azure configuration, you can disable the Azure Private Link connection between Cloud Volumes ONTAP and storage accounts.

Steps

1. In the upper right of the Cloud Manager console, click the Settings icon, and select **Connector Settings**.

2. Under **Azure**, click **Use Azure Private Link**.

3. Deselect **Private Link connection between Cloud Volumes ONTAP and storage accounts**.

4. Click **Save**.

Deleting a Cloud Volumes ONTAP working environment

You should always delete Cloud Volumes ONTAP systems from Cloud Manager, rather than from your cloud provider's console. For example, if you terminate a licensed Cloud Volumes ONTAP instance from your cloud provider, then you can't use the license key for another instance. You must delete the working environment from Cloud Manager to release the license.

When you delete a working environment, Cloud Manager terminates Cloud Volumes ONTAP instances and deletes disks and snapshots.

Resources managed by other services like backups for Cloud Backup and instances for Cloud Data Sense and Monitoring are not deleted when you delete a working environment. You'll need to manually delete them yourself. If you don't, then you'll continue to receive charges for these resources.

> ℹ️ When Cloud Manager deploys Cloud Volumes ONTAP in your cloud provider, it enables termination protection on the instances. This option helps prevent accidental termination.

Steps

1. If you enabled Cloud Backup on the working environment, determine whether the backed up data is still required and then delete the backups, if necessary.

   Cloud Backup is independent from Cloud Volumes ONTAP by design. Cloud Backup doesn't automatically delete backups when you delete a Cloud Volumes ONTAP system, and there is no current support in the UI to delete the backups after the system has been deleted.

2. If you enabled Cloud Data Sense or Monitoring on this working environment and no other working environments use those services, then you'll need to delete the instances for those services.

   - Learn more about the Cloud Data Sense instance.

   - Learn more about the Monitoring Acquisition Unit.

3. Delete the Cloud Volumes ONTAP working environment.

   a. On the Canvas page, double-click the name of the Cloud Volumes ONTAP working environment that you want to delete.

   b. Click menu icon and then click **Delete**.
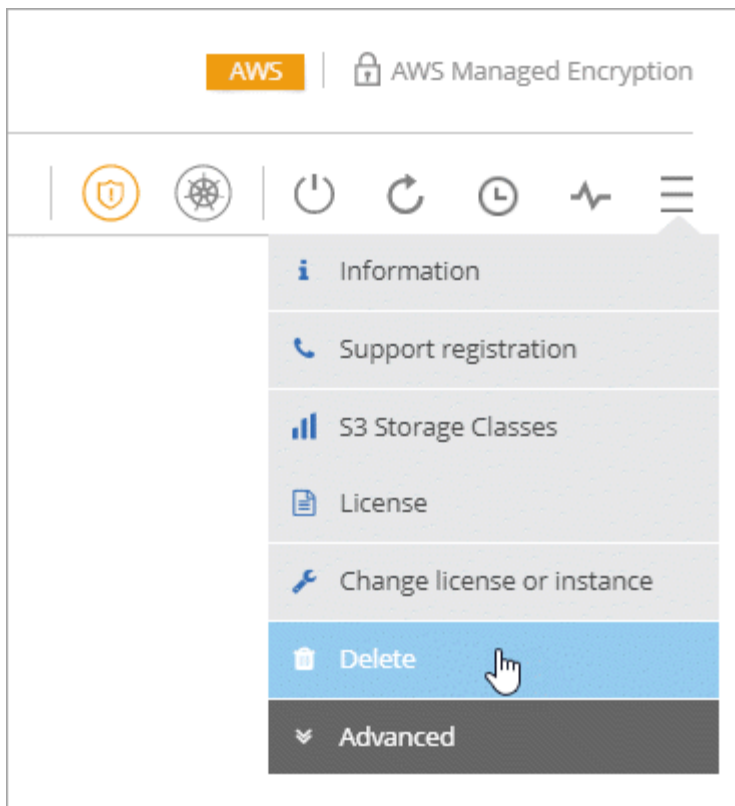
c. Type the name of the working environment and then click **Delete**.

It can take up to 5 minutes to delete the working environment.