Cloud\ \;Manager\ \;3\.5

Administering Cloud Volumes ONTAP

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1. Administering Cloud Volumes ONTAP

1.1. 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.

1.1.1. Connecting to OnCommand System Manager

You might need to perform some Cloud Volumes ONTAP tasks from OnCommand 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 in AWS or Azure.

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 Working Environments 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.

1.1.2. Connecting to the Cloud Volumes ONTAP CLI

The Cloud Volumes ONTAP CLI enables you to execute 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 Working Environments 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:

   [Screen shot: Shows the destination admin@192.168.11.5 on port 22.]

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

   Example

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

1.2. Updating Cloud Volumes ONTAP software

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

1.2.1. Overview

Cloud Manager displays a notification in Cloud Volumes ONTAP working environments when a new version of Cloud Volumes ONTAP is available:

[Screen shot: Shows the New version available notification which displays in the Working Environments page after you select a working environment.]

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.

Upgrades of HA pairs are nondisruptive—HA pairs continue to serve data during the upgrade process.
Cloud Manager might upgrade the HA mediator as part of this process.

Advanced options for software updates

Cloud Manager also provides the following advanced options for updating Cloud Volumes ONTAP software:

- Software updates using an image on an external URL

  This option is helpful if Cloud Manager cannot access the S3 bucket to upgrade the software, if you were provided with a patch, or if you want to downgrade the software to a specific version.

- Software updates using the alternate image on the system

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

Transitioning Cloud Volumes ONTAP to an earlier release in the same release family (for example, 9.3 to 9.2) is referred to as a downgrade. You can downgrade without assistance when downgrading new or test clusters, but you should contact technical support if you want to downgrade a production cluster.

1.2.2. Preparing to update Cloud Volumes ONTAP software

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

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.

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.

   [Screen shot: Shows the State field when you view information for an aggregate.]

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**.

1.2.3. Upgrading Cloud Volumes ONTAP to the latest version

You can upgrade to the latest version of Cloud Volumes ONTAP directly from Cloud Manager. Cloud Manager notifies you when a new version is available.

Before you begin

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

About this task

The upgrade process takes up to 25 minutes for a single Cloud Volumes ONTAP system and up to 90 minutes for an HA pair. Upgrades of HA pairs are nondisruptive. HA pairs continue to serve data during the upgrade process.

Steps

1. Click **Working Environments**.
2. Select a working environment.

   A notification appears in the right pane if a new version is available:

   [Screen shot: Shows the New version available notification which displays in the Working Environments page after you select a working environment.]

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.

1.2.4. Upgrading or downgrading 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 update from Cloud Manager. You might use this option if Cloud Manager cannot access the S3 bucket to upgrade the software or if you want to downgrade the software.

About this task

This upgrade or downgrade process takes up to 25 minutes for a single Cloud Volumes ONTAP system and up to 90 minutes for an HA pair. Upgrades and downgrades of HA pairs are nondisruptive. HA pairs continue to serve data during the process.

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 VPC, 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 AWS.
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 NetApp Downloads: Software.
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.

1.2.5. Downgrading 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. You can use this option to downgrade to the previous version of Cloud Volumes ONTAP, if you are experiencing issues with the current image.

About this task

This downgrade process is available for single Cloud Volumes ONTAP systems only. It is not available for HA pairs. The process takes the Cloud Volumes ONTAP system offline for up to 25 minutes.

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.

1.3. Modifying Cloud Volumes ONTAP systems

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

1.3.1. Installing license files on Cloud Volumes ONTAP BYOL systems

If Cloud Manager cannot obtain a BYOL license file from NetApp, you can obtain the file yourself and then manually upload the file to Cloud Manager so it can install the license on the Cloud Volumes ONTAP system.

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 (either **NetApp Cloud Volumes ONTAP BYOL for AWS**, **NetApp Cloud Volumes ONTAP BYOL for Azure**, or **NetApp Cloud Volumes ONTAP BYOL HA for AWS**), enter the serial number, confirm that you have read and accepted the privacy policy, and then click **Submit**.

   Example

[Screen shot: Shows an example of the NetApp License File Generator web page filled out, including a password, a product (NetApp Cloud Volumes ONTAP BYOL for AWS), and a product serial number.]

3. Choose whether you want to receive the serialnumber.NLF JSON file through email or direct download.
4. In Cloud Manager, select the Cloud Volumes ONTAP BYOL working environment.
5. In the Storage pane, click the menu icon, and then click **License**.
6. Click **Upload License File**.
7. Click **Upload** and then select the file.

Result

Cloud Manager installs the new license file on the Cloud Volumes ONTAP system.

1.3.2. Changing the instance or virtual machine type for Cloud Volumes ONTAP

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

About this task

- 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 virtual machine type affects AWS or Azure service charges.

Steps

1. From the working environment, click the menu icon, and then click **Change license or instance** for AWS or click **Change license or VM** for Azure.
2. If you are using a pay-as-you-go configuration, you can optionally choose a different license.
3. Select an instance or virtual 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.

1.3.3. Changing between pay-as-you-go configurations

After you launch pay-as-you-go Cloud Volumes ONTAP systems, 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 EC2 instance types or Azure virtual machine 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 virtual machine type affects AWS or Azure service charges.

Steps

1. From the working environment, click the menu icon, and then click **Change license or instance** for AWS or click **Change license or VM** for Azure.
2. Select a license type and an instance type or virtual 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 virtual machine type, or both.

1.3.4. Moving to an alternate Cloud Volumes ONTAP configuration

If you want to move between a pay-as-you-go subscription and a BYOL subscription or between a single Cloud Volumes ONTAP system and an HA pair, you can deploy a new system and then replicate data from the existing system to the new system.

Steps

1. Create a new Cloud Volumes ONTAP working environment.

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

2. If you chose a pay-as-you-go license and the tenant does not have a NetApp Support Site account assigned to it, manually register the systems with NetApp.

   Support from NetApp is included with Cloud Volumes ONTAP. To activate support, you must first register the system with NetApp.

3. Set up one-time data replication between the systems for each volume that you must replicate.
4. Terminate the Cloud Volumes ONTAP system that you no longer need by deleting the original working environment.

1.3.5. Modifying the storage virtual machine name

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

Steps

1. From the working environment, click the menu icon, and then click **Information**.
2. Click the edit icon to the right of the SVM name.

   [Screen shot: Shows the SVM Name field and the edit icon that you must click to modify the SVM name.]

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

1.3.6. 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.

1.3.7. Changing the network MTU for c4.4xlarge and c4.8xlarge instances

By default, Cloud Volumes ONTAP is configured to use 9,000 MTU (also called jumbo frames) when you choose the c4.4xlarge instance or the c4.8xlarge instance in AWS. You can change the network MTU to 1,500 bytes if that is more appropriate for your network configuration.

About this task

A network maximum transmission unit (MTU) of 9,000 bytes can provide the highest maximum network throughput possible for specific configurations.

9,000 MTU is a good choice if clients in the same VPC communicate with the Cloud Volumes ONTAP system and some or all of those clients also support 9,000 MTU. If traffic leaves the VPC, packet fragmentation can occur, which degrades performance.

A network MTU of 1,500 bytes is a good choice if clients or systems outside of the VPC communicate with the Cloud Volumes ONTAP system.

Steps

1. From the working environment, click the menu icon and then click **Advanced** > **Network Utilization**.
2. Select **Standard** or **Jumbo Frames**.
3. Click **Change**.

1.3.8. Changing route tables associated with HA pairs

You can modify the 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 the HA pair.

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.

1.4. Managing the state of Cloud Volumes ONTAP

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

1.4.1. 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

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

Steps

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

   [Screen shot: Shows the icon that loads the automatic shutdown page.]

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.

      [Screen shot: Shows a shutdown schedule that shuts down Cloud Volumes ONTAP every weekend at 12:00 AM for 48 hours.]

3. Click **Save**.

Result

Cloud Manager saves the schedule. The clock icon changes to indicate that a schedule is set: [Screen shot: Shows the automatic shutdown icon after a schedule is defined.]

1.4.2. 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.

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.

   [Screen shot: Shows the icon to turn off a Cloud Volumes ONTAP system.]

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.

1.5. Monitoring AWS storage and compute costs

You can view the cost associated with running Cloud Volumes ONTAP in AWS. The monthly cost consists of the compute purchased from AWS to run Cloud Volumes ONTAP and the disks purchased from AWS for Cloud Volumes ONTAP use.

Before you begin

The AWS payer account must meet specific billing and cost requirements and your Cloud Manager account must be associated with the AWS cost S3 bucket. For instructions, see Setting up AWS billing and cost management for Cloud Manager.

About this task

Cloud Manager updates the storage and compute costs every 12 hours. You should refer to AWS for final cost details.

Step

1. On the Working Environments 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 storage costs savings, if you enabled NetApp's efficiency features on volumes. If the cost information is not available, verify that the Cloud Manager Admin met the prerequisites listed earlier.

The following image shows an example of the AWS costs per month:

[Screen shot: Shows the costs per month for a Cloud Volumes ONTAP instance.]

The following image shows an example of storage cost savings:

[Screen shot: Shows the storage cost savings for a Cloud Volumes ONTAP instance.]

1.6. 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 your Cloud Manager system became unusable and you launched a new system, but you could not restore all Cloud Volumes ONTAP systems from a recent Cloud Manager backup.

Before you begin

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

Steps

1. On the Working Environments page, click **Add Working Environment**.
2. Under Discover, select **Cloud Volumes ONTAP**.

   [Screen shot: Shows the Cloud Volumes ONTAP icon for creating or discovering an instance.]

3. On the Region page, choose the region where the instances are running, and then select the instances.
4. 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 tenant.

1.7. Deleting a Cloud Volumes ONTAP working environment

It is best to delete Cloud Volumes ONTAP systems from Cloud Manager, rather than from AWS or Azure. For example, if you terminate a licensed Cloud Volumes ONTAP instance from AWS, you cannot use the license key for another instance. You must delete the working environment from Cloud Manager to release the license.

About this task

When you delete a working environment, Cloud Manager terminates instances, deletes disks, and

snapshots.

Cloud Volumes ONTAP instances have termination protection enabled to help prevent accidental termination from AWS. However, if you do terminate a Cloud Volumes ONTAP instance from AWS, you must go to the AWS CloudFormation console and delete the instance's stack. The stack name is the name of the working environment.

Steps

1. From the working environment, click menu icon and then click **Delete**.
2. Type the name of the working environment and then click **Delete**.

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