Configuring Actifio OnVault

Google Cloud Edition

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Contents

Preface

Your Actifio appliance's Documentation Library and AGM's Online help contain detailed, step-by-step, application-specific instructions on how to protect and access your data. The following guides will be of particular interest to users of Actifio CDS and Sky appliances:

- ***Configuring Resources and Settings With the Domain Manager***
- ***Planning and Developing Service Level Agreements***
- ***Virtualizing and Protecting Copy Data with the Application Manager***
- ***Accessing and Recovering Copy Data with the Application Manager***

The ActifioNOW Customer Portal

During the configuration and initialization of your Actifio appliance your Actifio representative provided you with a user name and password for the ActifioNOW customer portal.

From the customer portal you can obtain detailed reports about your Actifio appliance as well as search the portal's knowledge base for answers to specific questions.

To log into the Actifio Now customer portal:

1. Go to: **https://now.actifio.com**
2. When prompted, enter the user name and password provided by your Actifio representative.

Actifio Support Centers

To contact an Actifio support representative, you can:

- Send email to: support@actifio.com
- Call:

  From anywhere: +1.315.261.7501

  US Toll-Free: +1.855.392.6810

  Australia: 0011 800-16165656

  Germany: 00 800-16165656

  New Zealand: 00 800-16165656

  UK: 0 800-0155019

1 Introduction

Audience

The intended audience for this document is an Actifio customer who has, and is familiar with object storage. The audience must also be familiar with and have a basic understanding of Actifio processes and procedures.

Object storage vendors provide detailed conceptual information and step-by-step instructions on the use of their object storage product.

Actifio provides conceptual information and detailed step-by-step instructions that can be found in:

- The AGM Online Help
- The Actifio CDS and Sky Desktop Library
- The customer portal in ActifioNOW.

For an overview of Actifio's basic concepts and procedures see ***Getting Started with Actifio Copy Data Management***.

Actifio Pools

Actifio appliances retain data in pools:

- Actifio Snapshot Pools provide, local, short-term data retention i.e. a few days. Snapshot data ensures instant access to the latest production data.Snapshot pools also serve a source for OnVault policies.
- Actifio Dedup Pools provide local and remote, medium-term data retention i.e. three to six months. Dedup data is incrementally rehydrated before it is accessed.
- Actifio OnVault Pools define access to object stores. Data can be accessed directly from the object store without first copying it back to a local storage device.

Note: *OnVault can only be used on Actifio CDS systems capable of supporting 128TB dedup pools. Earlier generations of Actifio CDS hardware that were limited to 48TB or 64TB dedup pools cannot support OnVault.*

Incremental Forever Data Capture

OnVault policies support Actifio's incremental forever data capture model, where the first time a policy runs, it captures an entire image, then subsequent data captures are only the changes to the image.This allows you to perform more frequent uploads (typically daily) to an object storage target.

Actifio OnVault with incremental forever data capture is a cost-effective solution that allows you to replace your off site vault infrastructure with on-demand object storage to store your daily, weekly, monthly, and yearly backup images.

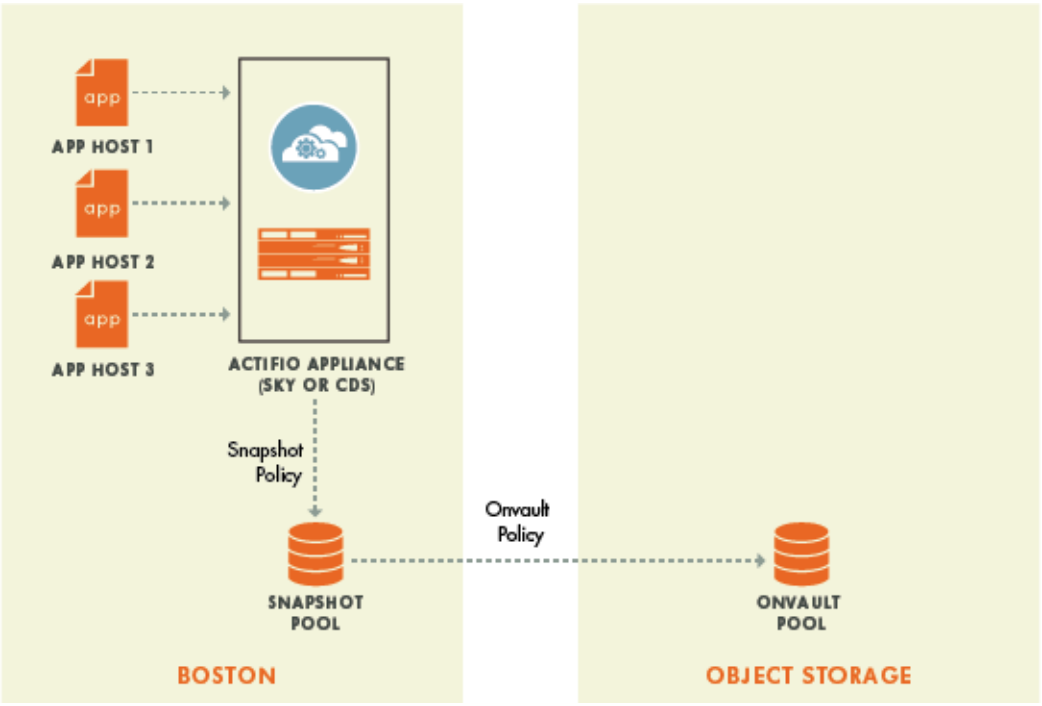
VMware VMs can be captured directly from your production environment to an OnVault pool.

Any data type captured in an Actifio Snapshot Pool can be written to an Actifio OnVualt pool. In addition, VMware VMs can be captured directly from your production environment to an OnVault pool.

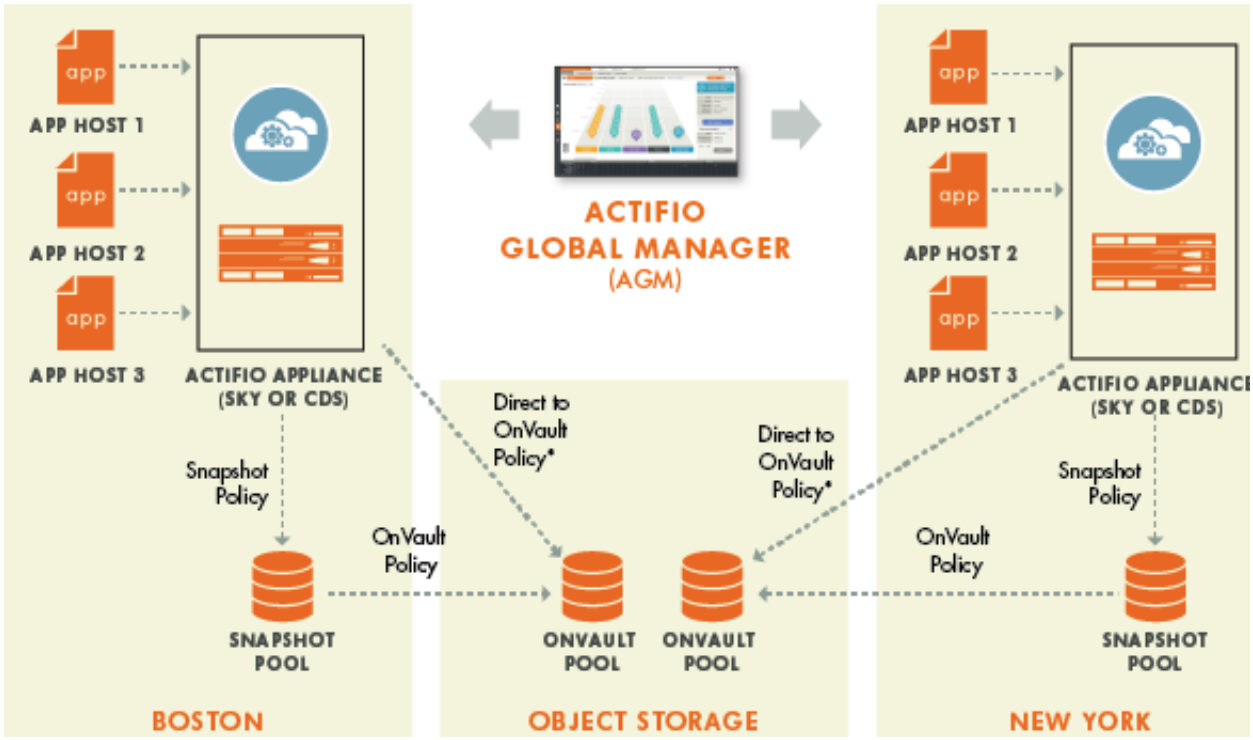
For details on how to create the policies associated with these capture operations, see Creating OnVault Policies on page 17

The following diagrams detail how Actifio OnVault fits within an environment with:

- A single Actifio appliance
- Multiple Actifio appliances managed by AGM



OnVault in A Single-Actifio Appliance Environment



OnVault in A Multi-Actifio Appliance Environment - Managed by AGM

Import OnVault Images

AGM users can import OnVault images from one managed Actifio appliance to another.

An image that has been imported to another Actifio appliance, can be mounted to that appliance's application hosts.

This is especially useful in a disaster scenario where an Actifio appliance is no loner available. Data from the lost site can be mounted almost instantly to the other Actifio appliance's application hosts.

Ownership of an application's OnVault images can be taken by the Actifio appliance to which it was imported. Actifio appliances can only expire the OnVault images it owns. If a image is mistakenly imported, the AGM Forget option undoes the import operation.

2 Configuring Google Nearline

This chapter provides a high-level overview of Google Nearline processes and procedures needed to configure your Google Nearline object storage account for use with an Actifio OnVault Storage Pool.

Specifically, this chapter provides high-level instructions on how to:

- Create a Nearline Class Bucket on page 6
- Create a Google Service Account on page 8

Before You Begin

Before you can begin, you must have a fully functional Google Cloud Platform project.

From the Google project you will need to create or obtain:

- A **Nearline class** bucket that the Actifio OnVault will use for storage.
- A Google Cloud Storage **service account.** The service account must have a minimum of Create, Modify, Read, and Write access.

From the service account you will need to obtain:

- A security key. The key must use **P 12** format. Once created, the key is automatically downloaded to the system on which you are working.
- An **Access ID**. This is in the form of an email address created automatically when you created the Google service account.

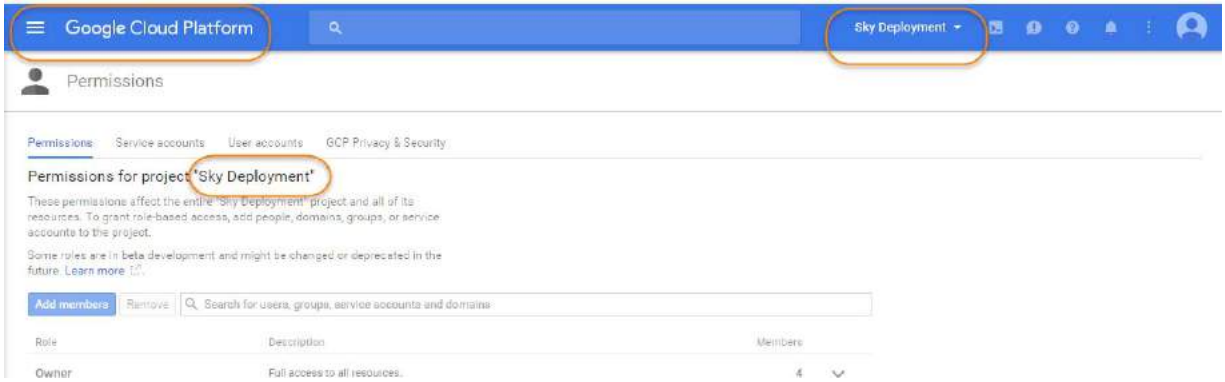
Note: *The Google Nearline screen captures and Google Nearline procedures in this document have been pulled directly from a Google Nearline Project. Updates to Google's user interface and procedures may occur before Actifio has had the opportunity to update this document. Consult the Google Nearline documentation for the most up-to-date information.*

Create a Nearline Class Bucket

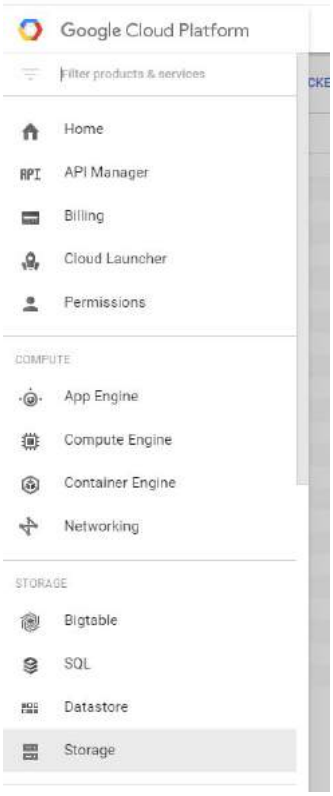
An Actifio OnVault Pool that uses Google Nearline Cloud Storage requires a Google Nearline Class Bucket with specific permission settings.

To create a Google Nearline Bucket with the permissions required by an Actifio OnVault Pool:

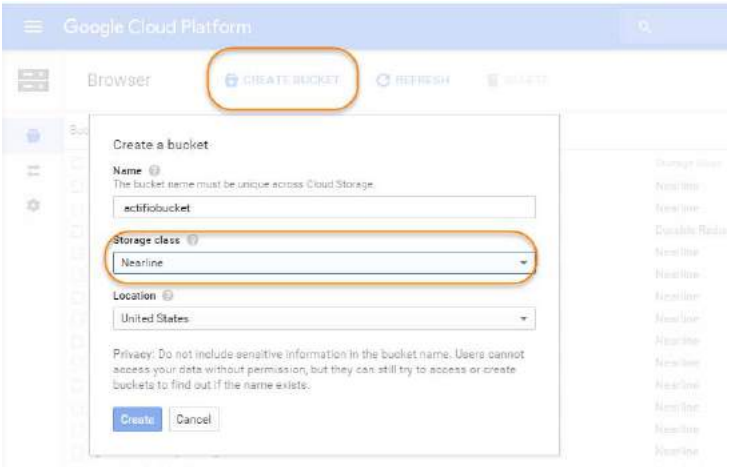
1. Log in to you Google Cloud Platform.
2. Ensure the Google Project you are in, is the project in which you want the Actifio appliance to write data. Projects are selected from the main menu.



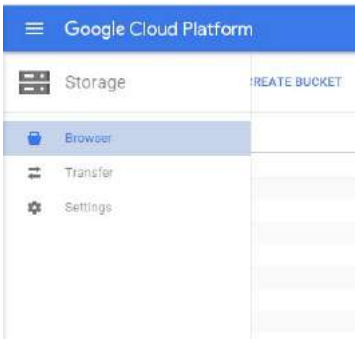
3. Click the menu icon in the upper left-hand corner of the Google interface and a navigation menu is displayed:



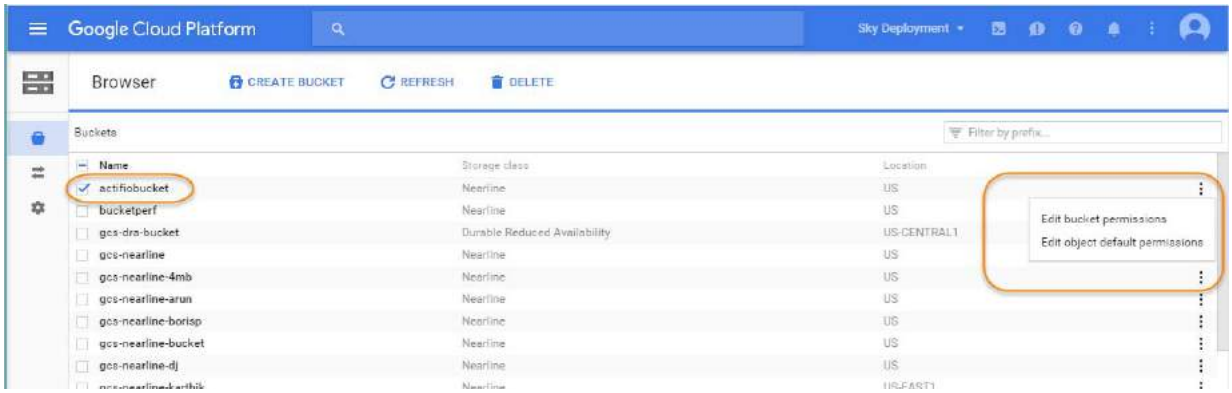
4. From the displayed navigation menu, click **Storage** and the Storage page is displayed:



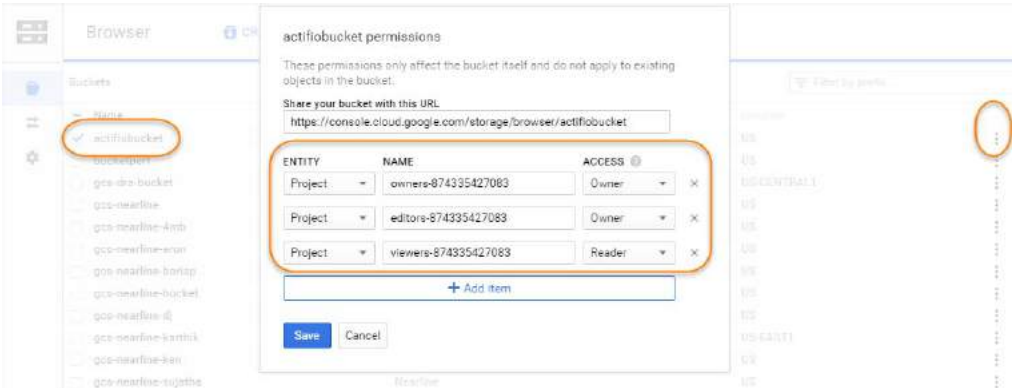
5. From the Storage page's main menu, click **Create Bucket** and the Create Bucket dialog box is displayed.
6. In the space provided, enter a name for the bucket.
7. From the Storage Class dropdown menu, select **Nearline**.
8. Select a location as needed.
9. Click **Create** and the bucket is created and page will open to the empty, new bucket's page.



10. In the left-hand navigation click **Browser** and all buckets are listed:



11. Select (check) the bucket created for the Actifio OnVault Pool.
12. Click the vertical ellipsis context menu icon.
13. Select edit bucket Permissions and the permissions dialog box is displayed:



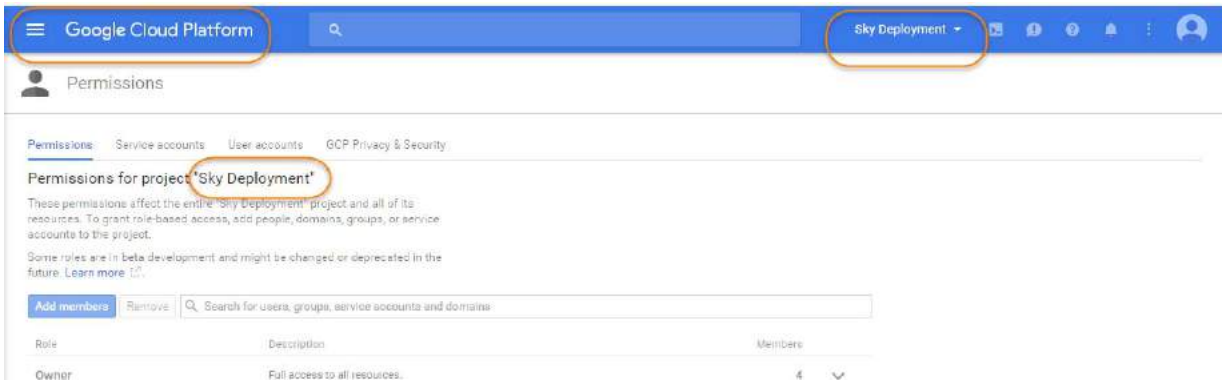
14. Set permissions to Owner.
15. Click **Save** and the bucket will have the permissions required by the Actifio OnVault Pool.

Create a Google Service Account

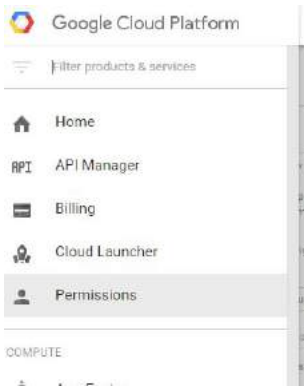
This section describes how to create a Google Service Account specifically for use by an Actifio appliance. From the service account you can the security key and an Access ID required by an Actifio OnVault Pool.

To create a new Google Service Account, from within the Google Project that contains the bucket the Actifio OnVault Pool will use for storage:

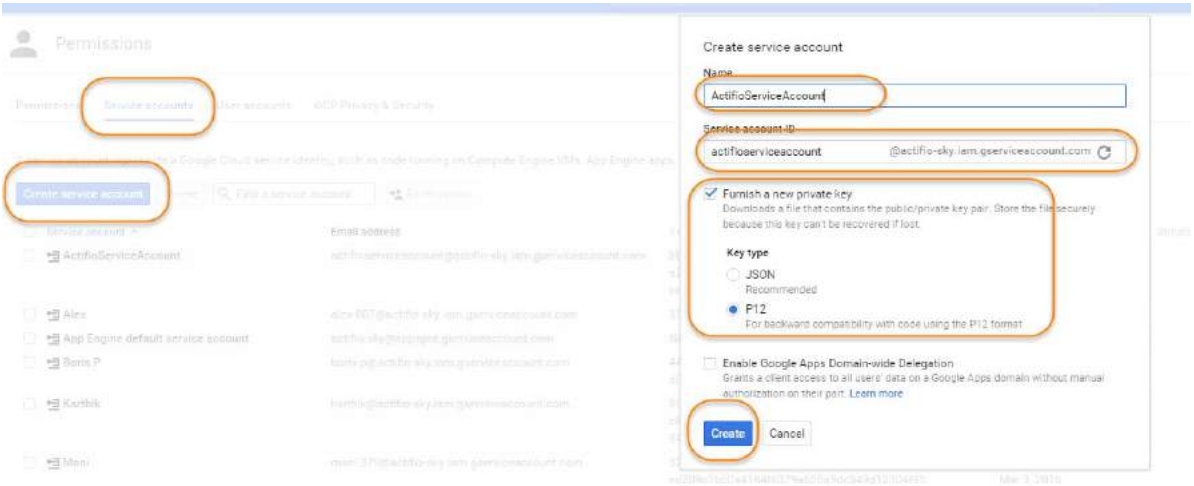
1. Log in to you Google Cloud Platform.
2. Ensure the Google Project you are in, is the project in which you want the Actifio appliance to write data. Projects are selected from the main menu.



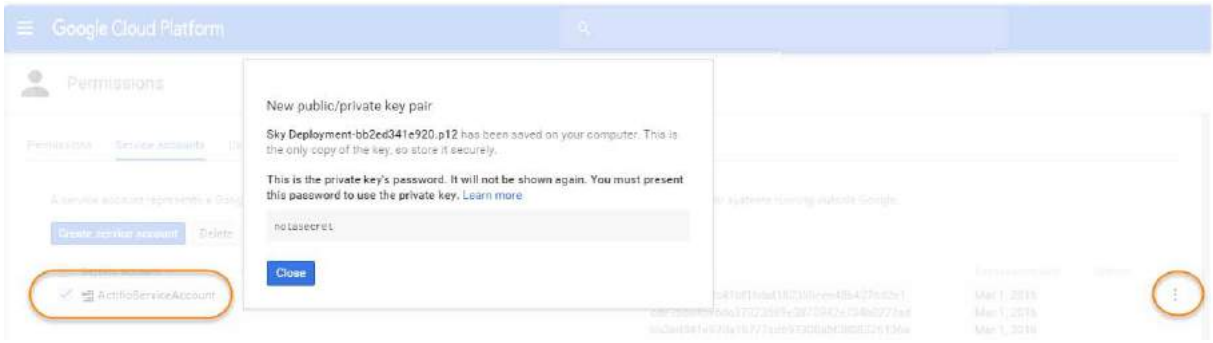
3. Click the menu icon in the upper left-hand corner of the Google interface and a navigation menu is displayed:



4. From the navigation menu, select **Permissions** and the permissions page is displayed.
5. On the Permissions main menu, click Service Accounts and the Service Accounts page is displayed.
6. From the Service Account page click **Create service account** and the create service account dialog box is displayed:



7. In the space provided
   - Enter a name for the service account.
   - Service Account ID - Record the full service account ID, including the portion you entered as well as suffix that begins with @ that was automatically added by Google Nearline. You will need this when you define the Actifio OnVault Pool.
8. Click **Furnish a new private key**.
9. Check the **P12** Key option.
10. Click **Create**. and the new private key will be down loaded to your local computer. You will need the key when you define the Actifio OnVault Pool.



CAUTION! *When the private key is downloaded, its password is displayed. You* ***MUST*** *record this password and keep it in a secure location. After you click* ***Close****, there will be no way to retrieve the password associated with the key you downloaded.*

11. After you recored the password, click **Close**.

You now have everything you need to define an Actifio OnVault Pool for this Google Cloud Storage project instance.See Creating an Actifio OnVault Pool on page 11.

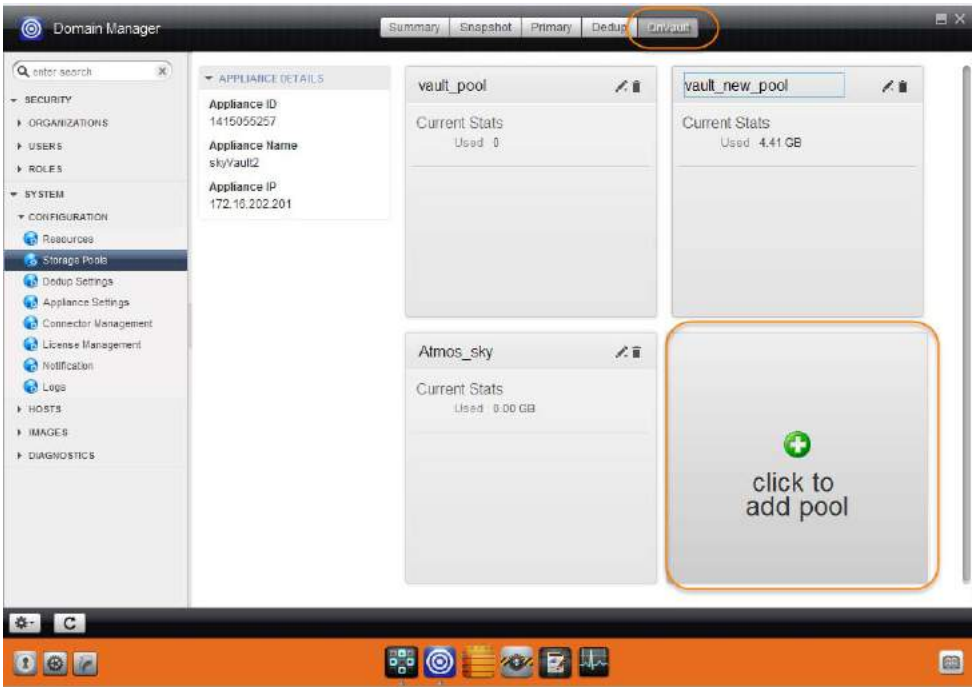
3 Creating an Actifio OnVault Pool

OnVault Pools define access to an object store. OnVault Pools are created from an Actifio CDS or Actifio Sky appliance. The Actifio appliance from which the OnVault Pool was created or the AGM that manages that appliance (if applicable), can use the pool to create a Resource Profile.The Resource profile is used along with a Production Snapshot to OnVault Policy to send captured snapshot data to the assigned storage.

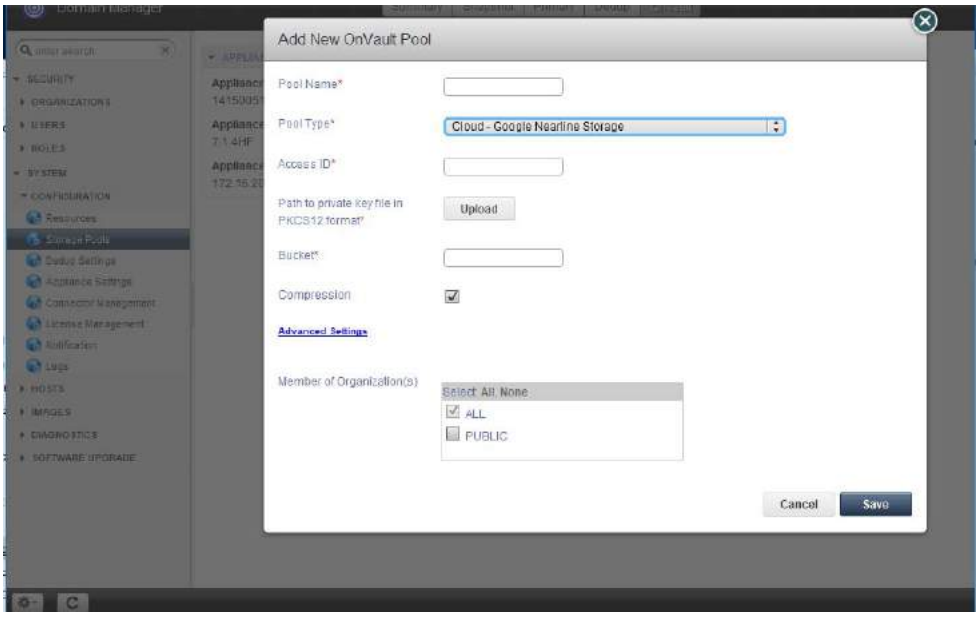
The best practices for customers using AGM is to use the same object store for all OnVault Pools. This includes having the same access credentials. Doing so makes the import operation and disaster recovery operations seamless.

To create an OnVault pool in a Google Nearline object store:

1. Open the **Domain Manager** to **System** > **Configuration** > **Storage Pools**.
2. Select the **Vault** tab. The Vault Pools page opens.



3. Click **Click to add pool** and a dialog box opens that will allow you to select Google Cloud Storage:



4. From the drop down menu, select **Cloud - Google Nearline Storage**.
5. Enter a name for the OnVault Pool.
6. Enter the **Access ID** for the Google Cloud Storage Nearline for the service account. It will be in the form of an email address.
7. Click **Upload** to upload a Private Key file in PKCS12 (P12) format. This key file was automatically downloaded from the Google Cloud Storage Nearline account to the system you accessed and created the service account.
8. Enter the Nearline Class bucket name in which the OnVault Pool's data will be stored.
9. In most cases you will want to keep the compression option checked. Compression will keep network traffic to a minimum.
10. **Advanced Settings** should only be changed from the default block size at the direction of Actifio Support.

Note: *Actifio uses HTTPS to replicate the data. By default, Google employs encryption at rest for data stored in the cloud.*

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11. Select the organization memberships for the OnVault pool as needed.

4 Creating Resource Profiles

Resource Profiles define which Actifio pools will be used to retain application data. Resource profiles can be created from AGM or Actifio CDS and Sky appliances.

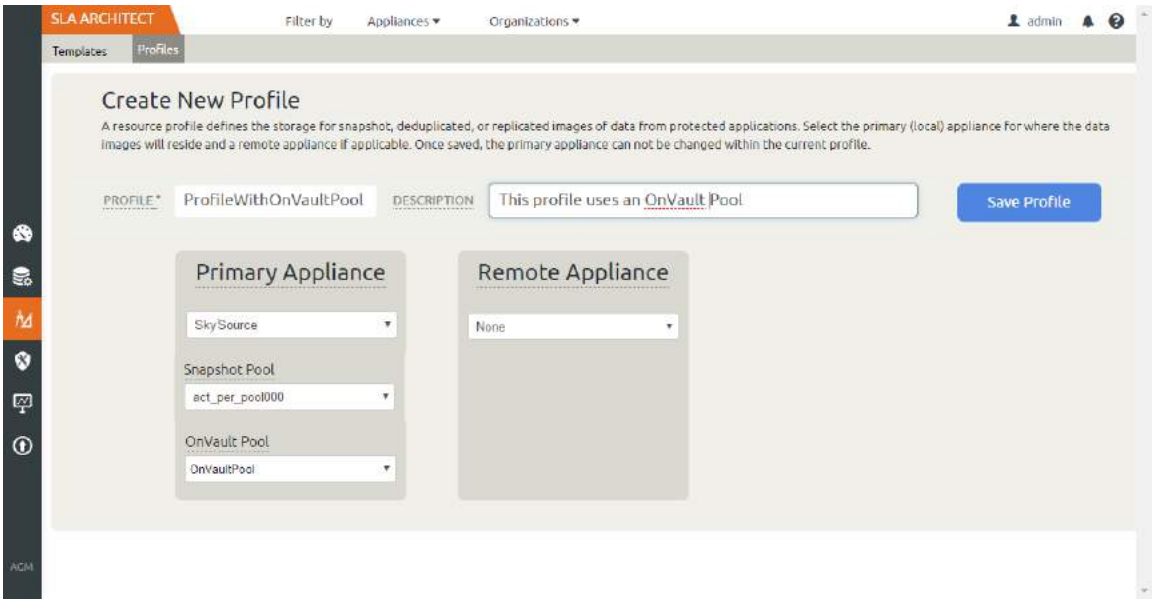
Note: *The best practice for customers using AGM is to create Resource Profiles from AGM.*

Creating a Resource Profile Using AGM

Resource Profiles are created in the Actifio Service Level Architect (SLA) service. To create a Resource Profile from AGM:

1. From the SLA Architect select the Profiles tab at the top of the page.
2. Either select and edit existing Resource Profile or click Create Profile to create a new profile and the Resource Profile page is displayed.

Caution! *If you select an existing Resource Profile, ALL applications to which the profile is applied will be impacted by changes to the profile.*



3. In the spaces provided, enter a name and description for the profile.
4. Select the Primary Appliance from the drop-down list. This is the appliance on which the profile was or will be created.

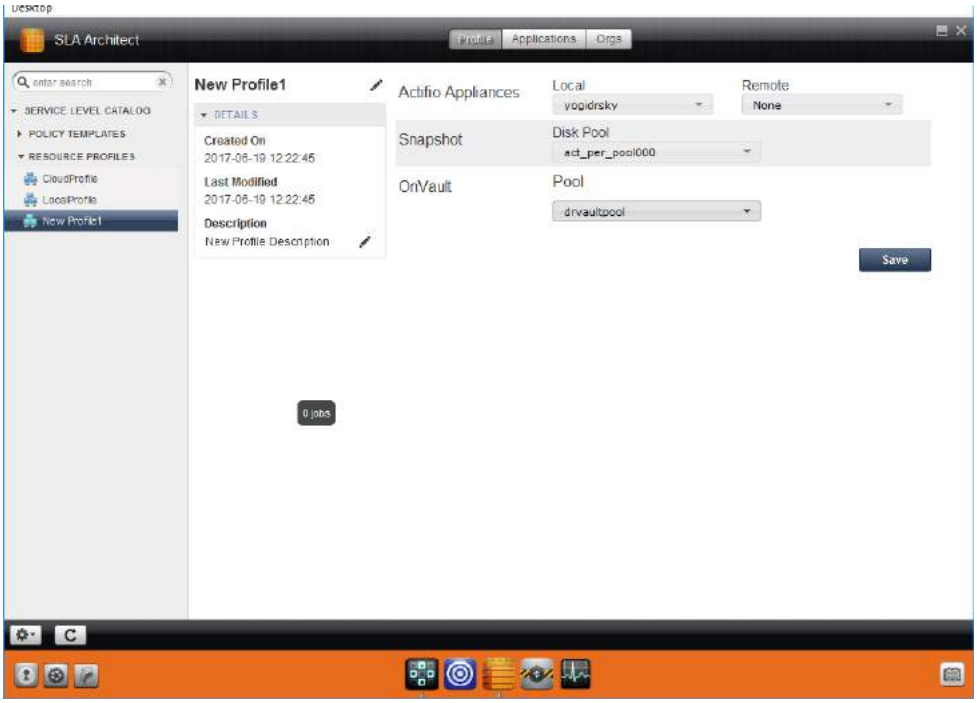
5. From the Snapshot Pool drop-down menu select the Snapshot Pool that the OnVault Pool will use as its source.
6. From the **OnVault Pool** drop down menu, select the Actifio OnVault Pool to which production data in the Snapshot Pool will be sent. You can select this option only if the selected Actifio appliance has defined an OnVault Storage Pool.
7. If this Profile will be used in an SLA Template that contains policies that will replicated data to another Actifio appliance, then from the drop down list under Remote Appliance, select the Actifio appliance to which data will be replicated. The remote Actifio appliance selected is not used with OnVault.
8. Click **Save Profile**.

Creating a Resource Profile From the Actifio Desktop

Resource Profiles are created in the Actifio Service Level Architect (SLA) service. To create a resource profile from the Actifio Desktop:

1. From the SLA Architect select either an existing Resource Profile or from the SLA Architect's service menu, click **New Profile**... and the Resource Profile page is displayed.

Caution! *If you select an existing Resource Profile, ALL applications to which the profile is applied will be impacted by changes to the profile.*



2. Select the local Actifio appliance from **Local** drop-down list. This is the appliance on which the profile is created.
3. Ensure a Snapshot Pool from the **Disk Pool** drop-down list is selected. Data written to this pool is the source data for the OnVault Pool.
4. From the **OnVault Pool** drop down menu, select the Actifio OnVault Pool to which production data in the Snapshot Pool will be sent. You can select this option only if this Actifio appliance has defined an OnVault Storage Pool.

5. If this Profile will be used in an SLA Template that contains policies that will replicated data to another Actifio appliance, then from the drop down list under Remote Appliance, select the Actifio appliance to which data will be replicated. The remote Actifio appliance selected is not used with OnVault.

6. Click **Save**.

5 Creating OnVault Policies

An OnVault policy defines when data is captured, the frequency it will be captured, and how long it will be retained.

OnVault Policies can be created from AGM, Actifio CDS appliances, or Actifio Sky appliances.

Note: *The best practice for customers using AGM is to create or update templates on AGM and then push them to managed Actifio appliances.*

Actifio allows you to create a two types of OnVault policies:

- AGM and Actifio Desktop users can create Snapshot to OnVault policies that allow them to capture data in an Actifio Snapshot Pool and further protect that data in an Actifio OnVault Pool.
- AGM users can create Direct to OnVault policies that allow them to capture VMs in their production environment and protect them directly to an Actifio OnVault Pool.

Caution! *If you add an OnVault Policy to an existing SLA Policy Template,* ***ALL applications*** *to which the SLA Policy Template is applied will be impacted by the changes.*

Creating an OnVault Policy With AGM

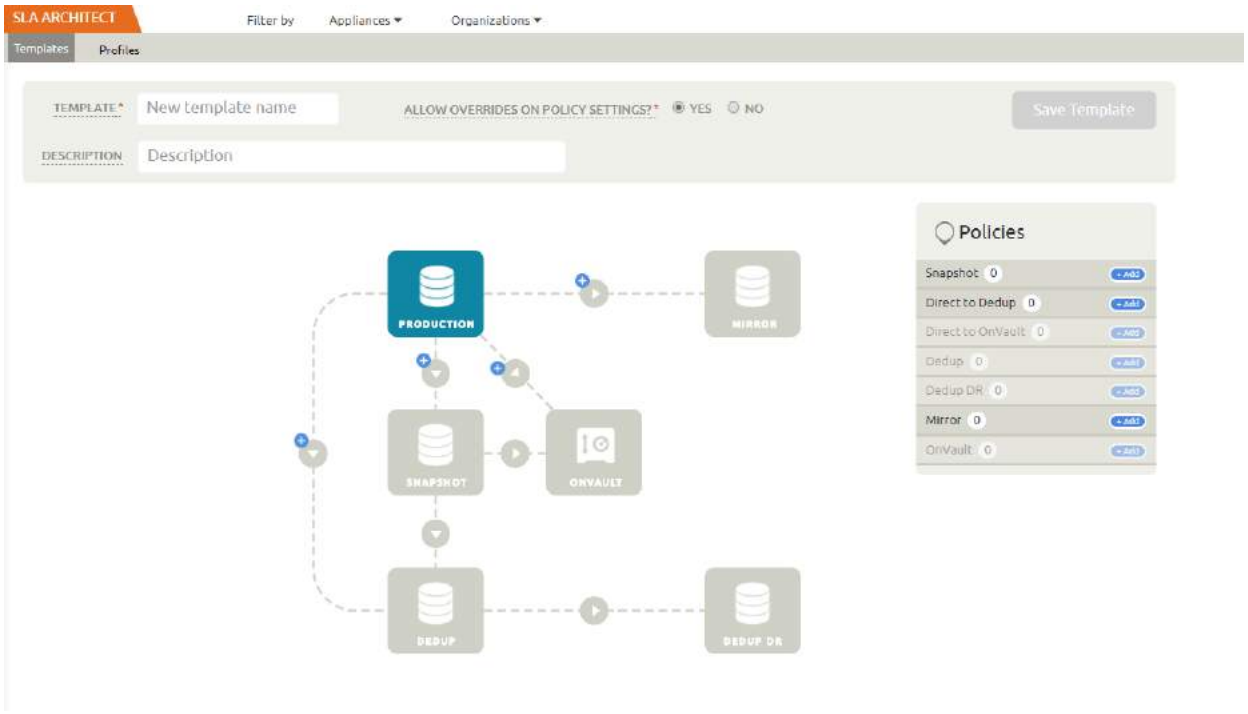
Note: *Best practices for creating SLA Policy Templates and Policies can be found in the AGM Online Help.*

An Actifio OnVault policy can be created in an existing SLA Template that has a Production to Snapshot policy, or created as part of a new SLA Template.

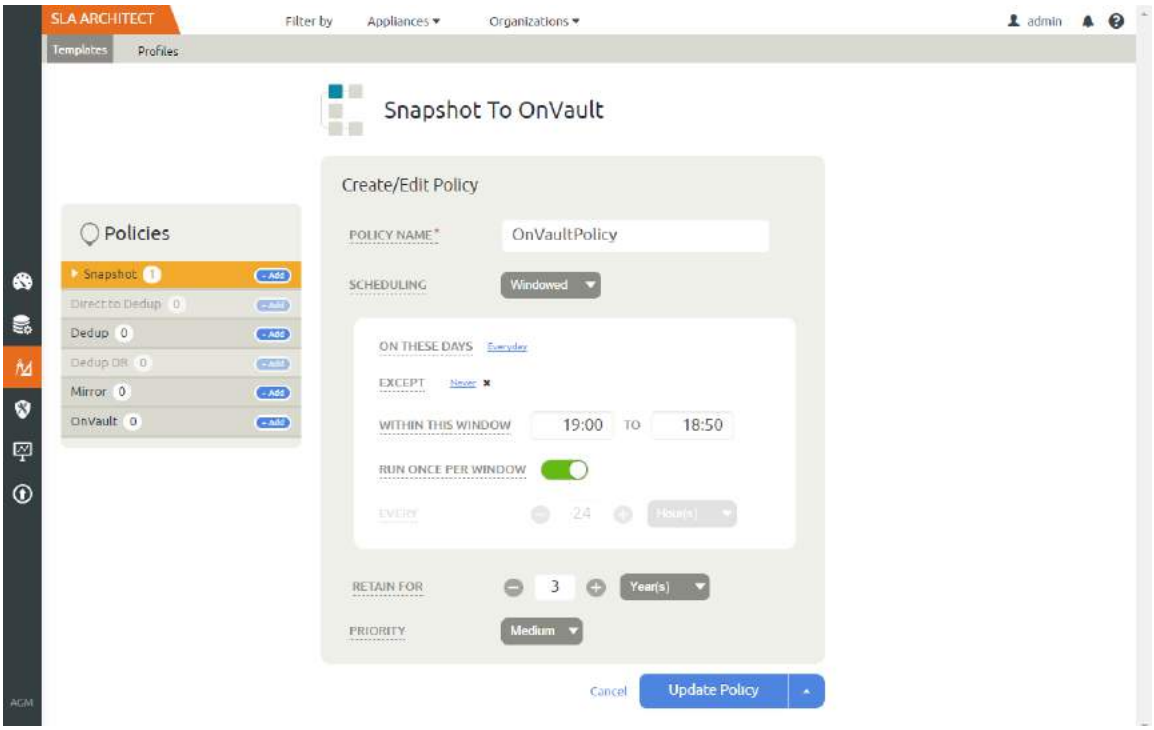
AGM Snapshot to OnVault Policy

SLA Policy Templates are defined in the Actifio SLA Architect service. Before you can create an Actifio OnVault policy, you must use an existing SLA Template that has a Production to Snapshot policy, or create a new SLA Template with a Production to Snapshot policy. Images captured by Production to Snapshot policies are used as the source for OnVault policies.

To create a Snapshot to OnVault Policy from AGM:



1. From an existing SLA Template or a new SLA Template with a Production to Snapshot policy, click the plus sign + between Snapshot and OnVault and the Snap to OnVault page is displayed:

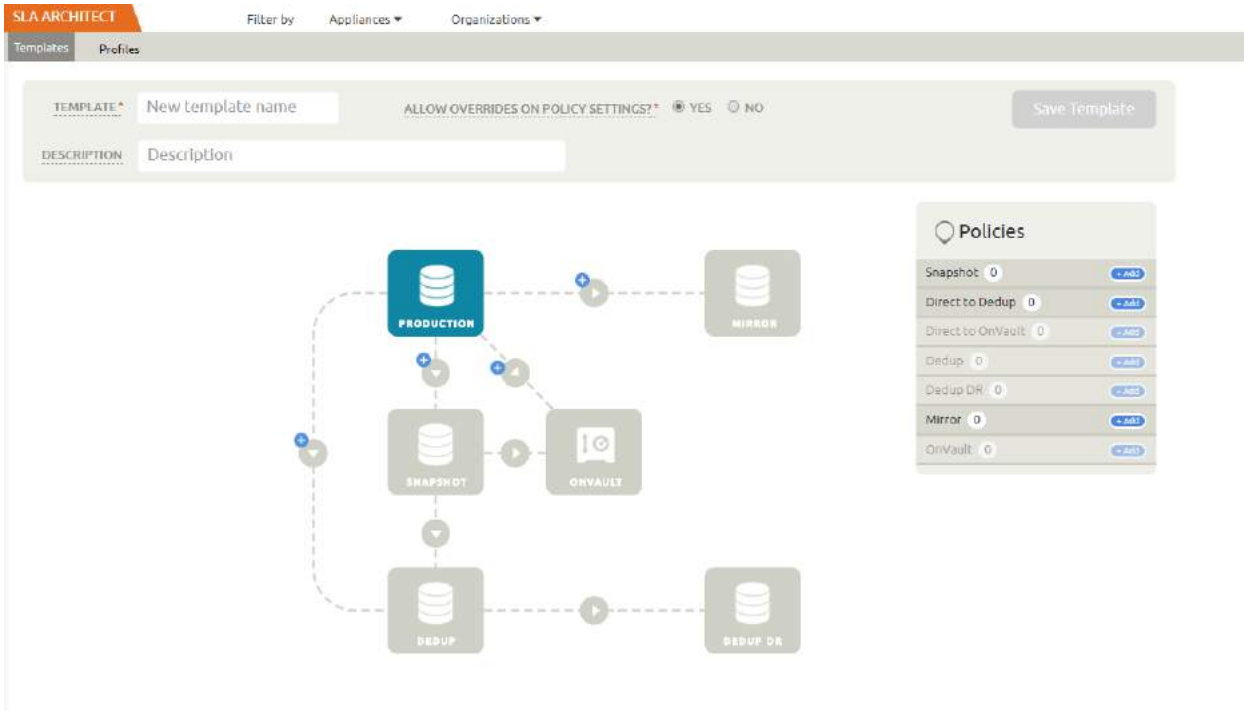


2. Set the policy according to your needs. For example, an OnVault policy could be defined as:
    - Within a window
    - Run **Everyday**
    - Between 19:00 to 18:50
    - Once per window
    - Retain for **3 Years**
3. Click **Update Policy** and the policy is created.

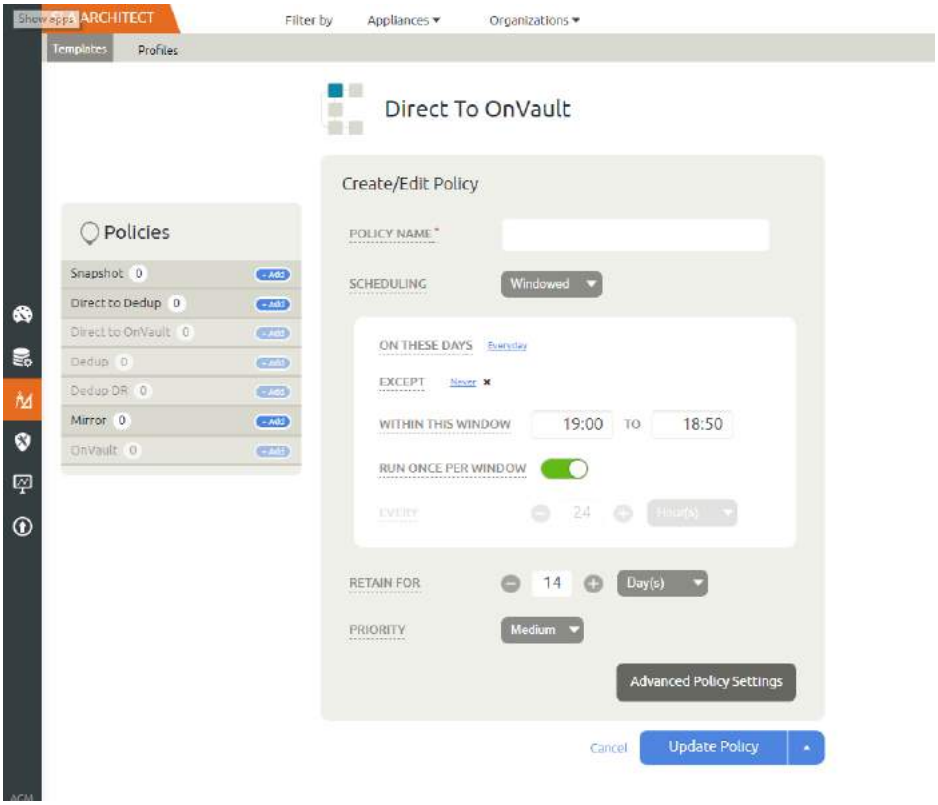
AGM Direct to OnVault Policy

Direct to OnVault policies are used to capture VMware VMs and can only be created in AGM.

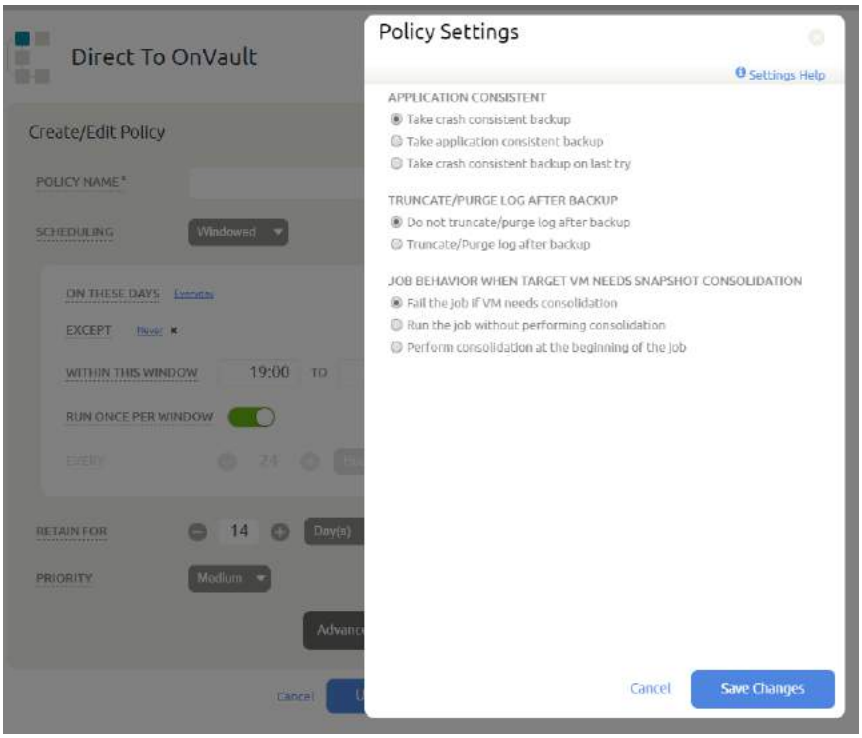
To create an Actifio Snapshot to OnVault Policy from AGM:



1. From an existing SLA Template or a new SLA Template with a Production to Snapshot policy, click the plus sign + between Production and OnVault and the Direct to OnVault page is displayed:



2. Set the policy according to your needs. For example, an OnVault policy could be defined as:
    - Within a window
    - Run **Everyday**
    - Between 19:00 to 18:50
    - Once per window
    - Retain for **3 Years**
3. Click **Advanced Policy Settings** and the Policy Settings dialog box is displayed. This dialog box allows you to set VM specific advanced policy settings:



4. From the Policy settings dialog box select:

- **Application Consistent:**

  Take crash consistent backup: Crash-consistent backup is a fast backup of application data in storage as if power were lost at that moment. It does not pause application data I/O. All data on disk are saved, and data in memory is lost. Incomplete transactions may be saved. The recovery of a crash consistent backup may take longer time and introduce exceptions. Typically recovery from crash has to be made manually. Crash consistent backups are easy and fast for virtual machines.

  Take application consistent backup: Application-consistent backup notifies the application to prepare for a backup. This option loses no data. It pauses application data I/O, completes in-flight transactions, and flushes memory to disk. On recovery, data is easily accessible. For virtual clients, usually an agent is needed to get notification of a backup at host, and then notify applications, and may need to wait for an approval from applications. Not all applications support application-consistent backups.

  Take crash consistent backup on last try: This option initially takes application consistent backups, but if an application consistent backup fails for any reason, it will then take a crash consistent backup.

- **Truncate/Purge Log After Backup:**

  Select whether to truncate the logs after every backup. When this is selected, application-related logs are truncated up to the most recent backup.

- **Job Behavior When Target VM Needs Snapshot Consolidation:**

  Fail the job: Fails the job.

  Run the job without performing consolidation: All jobs run normally even if consolidation is pending.

  Perform consolidation at the beginning of the job: Backup jobs try to perform consolidation at the beginning of the job. If consolidation fails, the job fails.

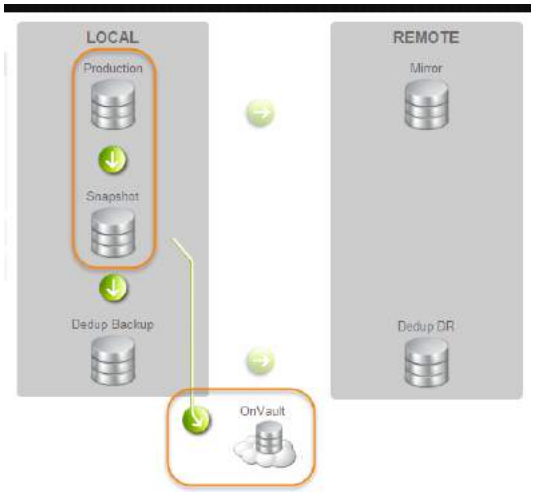
5. Click **Save Changes** or **Cancel** and the dialog box closes.
6. Click **Update Policy** and the policy is created.

Creating a Snapshot to OnVault Policy from the Actifio CDS/Sky Desktop

> ***Note:*** *Best practices for creating SLA Policy Templates and Policies can be found in the* ***Developing Service Level Agreements*** *guide.*

SLA Policy Templates are defined in the Actifio SLA Architect service. Before you can create an OnVault policy, you must use an existing SLA Template that has a Production to Snapshot policy, or create a new SLA Template with a Production to Snapshot policy. Images captured by Production to Snapshot policies are used by OnVault policies.

To create an OnVault Policy from an Actifio CDS or Actifio Sky appliance:



1. From an existing SLA Template or a new SLA Template with a Production to Snapshot policy, click the green arrow between Snapshot and OnVault and the Snap to OnVault dialog box is displayed:

2. Set the policy according to your needs. For example, an OnVault policy could be defined as:
   - Within a window
   - Run **Everyday**
   - Between 19:00 to 18:50
   - Once per window
   - Retain for **3 Years**
3. Click **Save** and the policy is created.

6 Accessing and Importing Images

Once you have a Resource Profile that uses an OnVault Pool and an SLA Policy Template that contains an OnVault Policy, you can, from the Actifio Application Manager, apply the Resource Profile and SLA Policy Template to applications and VMs. The OnVault policy will run according to its schedule and the captured image will be written to the OnVault Pool specified in the Resource Profile.

Accessing Data in Actifio OnVault

Once you have a Resource Profile that uses an OnVault Pool and an SLA Policy Template that contains an OnVault Policy, you can, from the Actifio Application Manager, apply the Resource Profile and SLA Policy Template to applications and VMs. The OnVault policy will run according to its schedule and the captured image will be written to the OnVault Pool specified in the Resource Profile.

After the first capture operation has completed, data in an Actifio OnVault Pool's object storage location can be accessed according to the following rules:

- Actifio CDS and Sky appliances can create clones from OnVault data.
- Actifio CDS and Sky appliances cannot create LiveClones from OnVault data.
- Actifio Sky appliances can mount OnVault data.
- Actifio CDS appliances can mount data in an OnVault Pool, however, it will copy all data to the snapshot pool first, then do the mount.
- Actifio CDS and Actifio Sky appliances can perform Application Aware mounts of data in an OnVault Pool.

For details on how to access data captured by AGM, see the AGM online help. For details on how to access data captured by an Actifio appliance, see ***Accessing and Recovering Copy Data with the Application Manager***.

Import OnVault Images

AGM's user interface supports the import of OnVault images between managed Actifio appliances. Images cannot be imported from an Actifio CDS and Actifio Sky appliance's desktop interface.

When an image is imported to an Actifio appliance, that Actifio appliance can instantly mount the imported data to its managed hosts.

Ownership of imported data is maintained by the source appliance. The Import function allows ownership to be transferred to the appliance to which the data is imported. Ownership gives full control over the image, including the ability to expire the image.

In case an image is accidentally imported, AGM provides a Forget Imported Image function that will remove an imported image from an Actifio appliance.

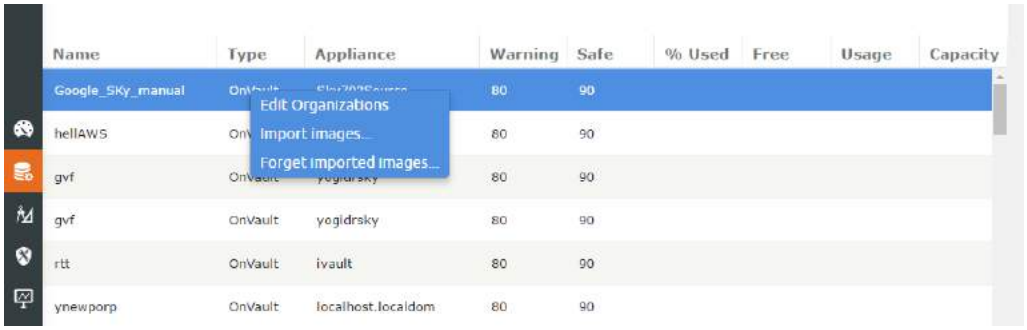
Images can be imported from the AGM Domain Manager's Storage Pool page and the AGM Application Manager's Applications page.

To facilitate importing images, when defining a OnVault Pool for an Actifio CDS or Sky appliance, use the same object store and object store credentials.

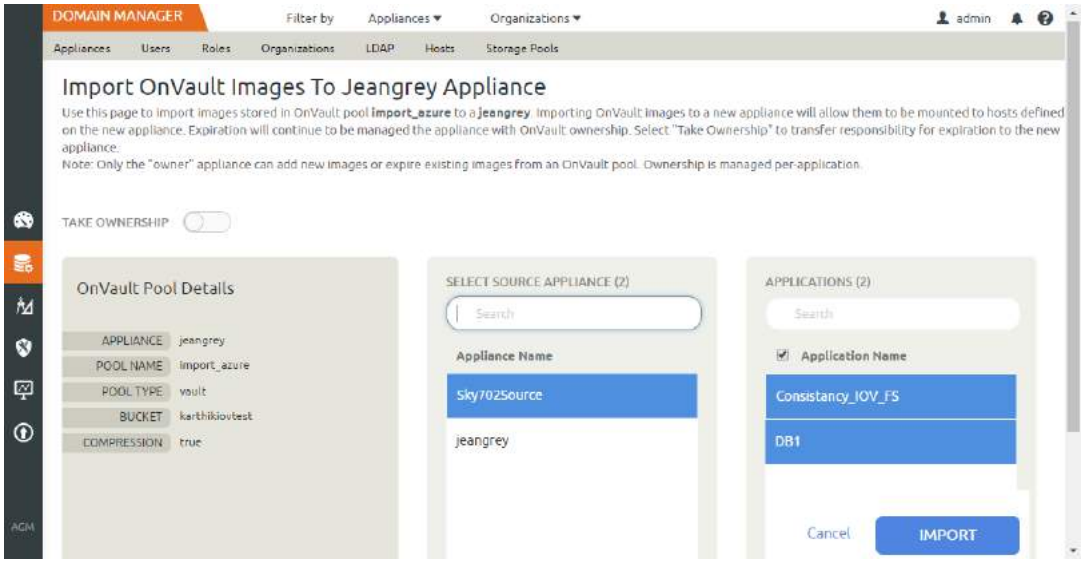
Importing Images From the AGM Domain Manager's Storage Pool Page

Importing images from the Domain Manager's Storage Pool page has the advantage of allowing you to select multiple application images.

To import images from the Domain Manager's Storage Pool page:



1. Right click on an OnVault Storage Pool and from the drop down menu select I**mport Images..** and the Import OnVault Images page is displayed:

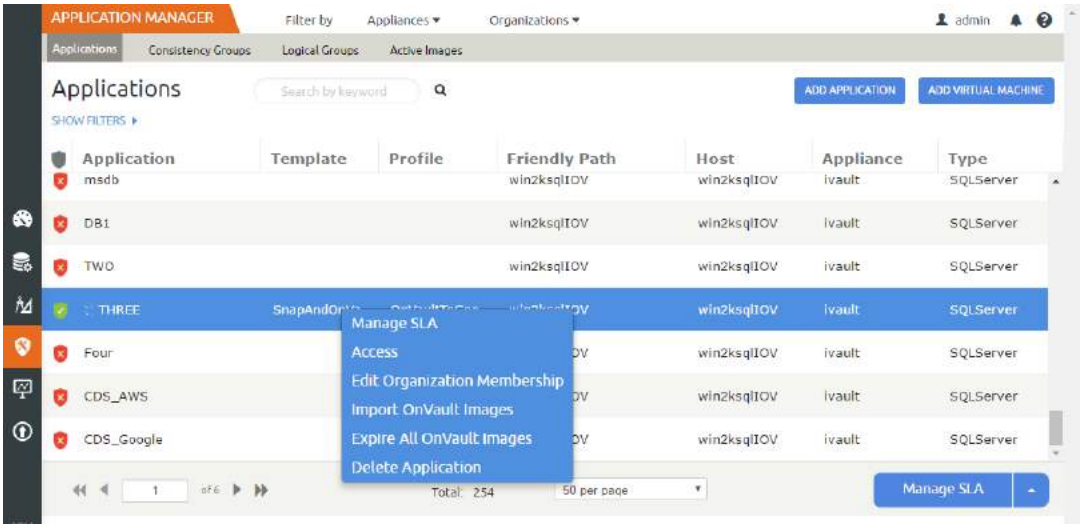


2. Select the Actifio appliance to which the application(s) will be imported.
3. Select the application(s) to import.
4. Click **Import** and the import operation will begin. A message will be displayed when the operation completes.

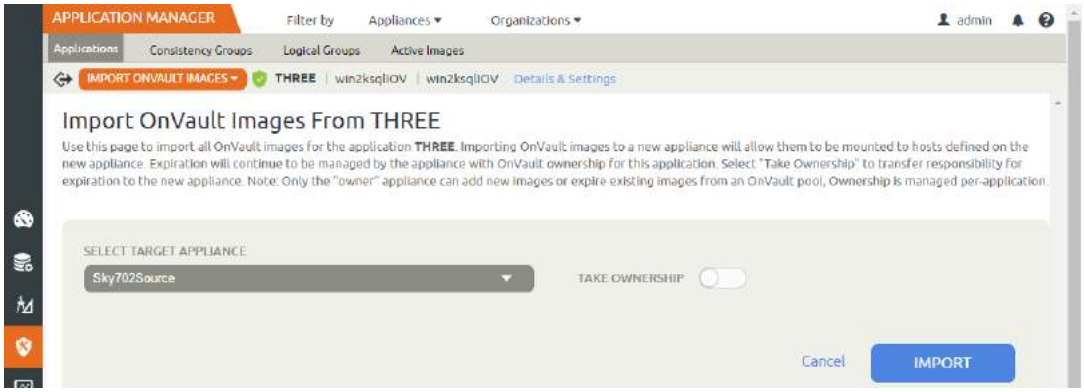
Importing Images From the AGM Application Manager's Application Page

Importing images from the Application Manager's Application page has the advantage of allowing you to quickly select a single, specific application image to be imported.

To import images from the Application Manager' Application page:



1. Right click on an application that is protected in an OnVault Pool
2. From the drop down menu select Import OnVault Images and the Import OnVault Images page is displayed:



3. From the Select Target Appliance drop down menu, select the appliance to which the image will be imported.
4. Click **Import** and the import operation will begin. A message will be displayed when the operation completes.