Object Storage: Create and Manage OCI Object Storage

Lab 10-1 Practices

Get Started

Overview

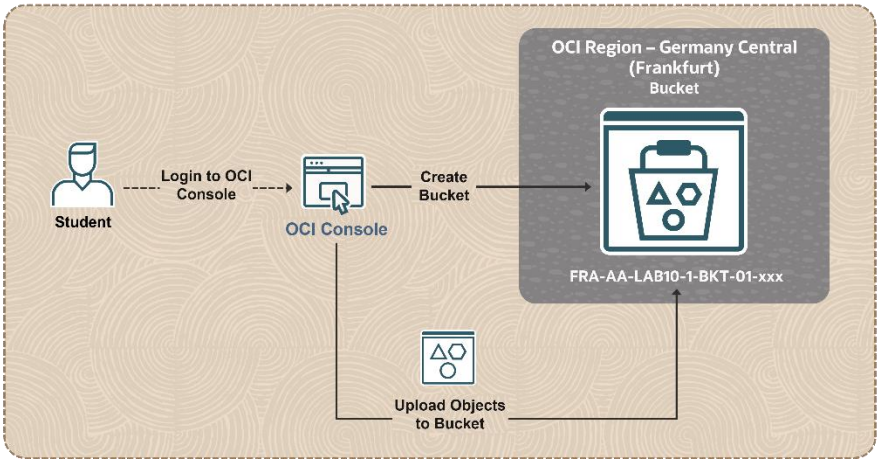
The Oracle Cloud Infrastructure (OCI) Object Storage provides unlimited capacity with high durability and scalability. It is highly reliable and cost efficient. The object storage resources include namespace, bucket, and object.

The Object Storage is characterized with strong consistency and security with encryption. By creating unlimited buckets, you can add as many objects as required with a maximum of 10TiB per object. In this lab, you will work on buckets, object versioning, object lifecycle management, replication policy, and retention rule.

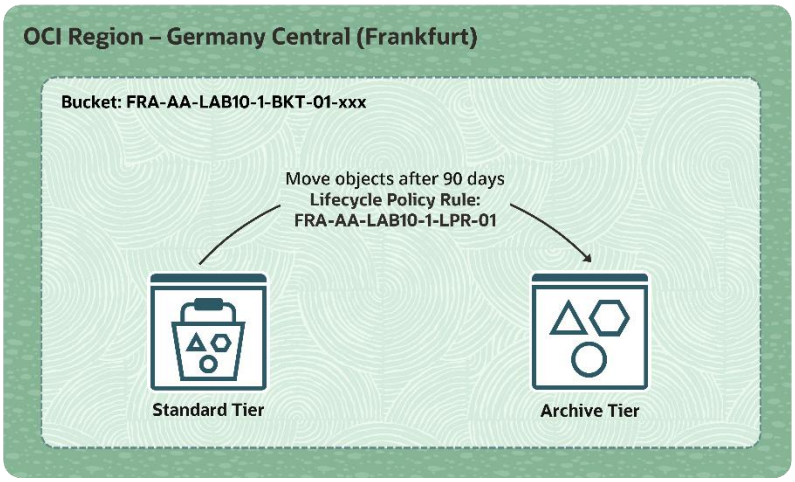
In this lab, you will:

- Create an object storage bucket
- Upload an object to a bucket
- Configure a lifecycle policy rule for the bucket
- Create a replication policy for the bucket
- Create a retention rule for the bucket

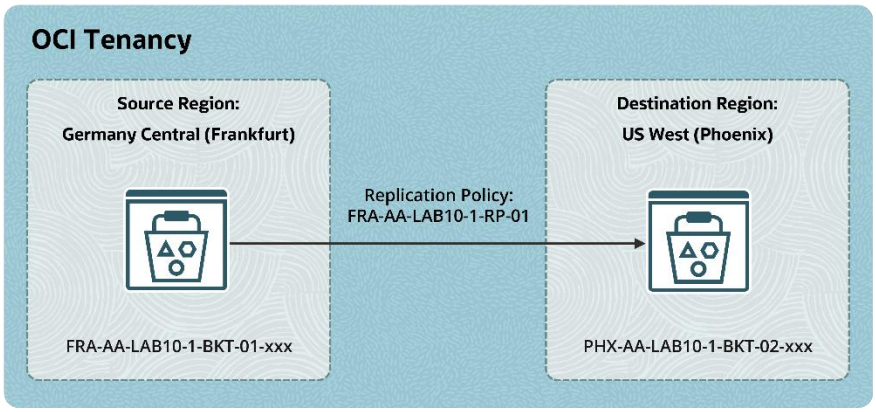
Create a Bucket and Upload an Object



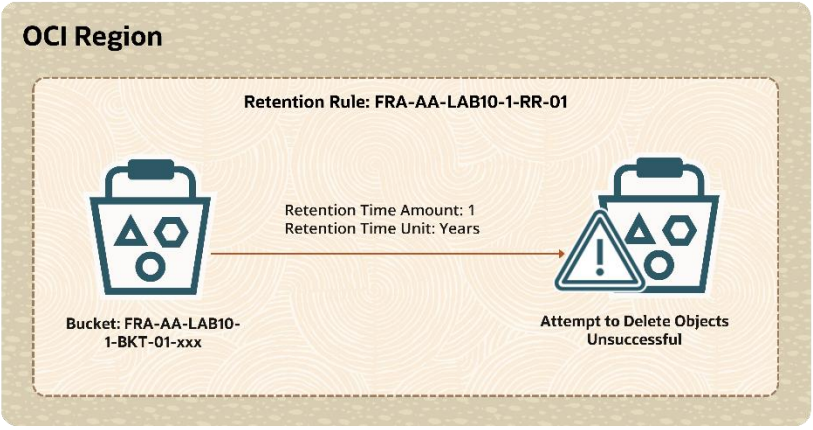
Configure a Lifecycle Policy Rules for the Bucket



Create a Replication Policy for the Bucket



Create a Retention Rule for the Bucket



Create an Object Storage Bucket

In this practice, you will create an Object Storage bucket.

Select the region available in the tenancy allotted to you. In this lab, we will use Germany Central (Frankfurt) as our region.

If you are not in the Germany Central (Frankfurt) region, specify the correct region key corresponding to your region in place of **FRA**. Visit Regions and Availability Domains (oracle.com) for information about the region key.

Tasks

1. Sign in to your Oracle Cloud Infrastructure (OCI) account.
2. From the **Main Menu**, select **Storage.**
3. Under **Object Storage and Archive Storage**, click **Buckets**.
4. From the left navigation panel, select the compartment in which you have permission to work. Then the page updates to display only the resources in that compartment.
5. Click **Create Bucket**.
6. In the **Create Bucket** dialog box, specify the following attributes of the bucket:
   - **Bucket Name**: Enter **`FRA-AA-LAB10-1-BKT-01-xxx`** as the name for the bucket. Specify a random number in place of xxx to make it unique.
   - **Default Storage Tier**: Select the default tier in which you want to store the data. After it is set, you cannot change the default storage tier of a bucket. When you upload objects, this tier will be selected by default. You can, however, select a different tier. In this case, select **Standard**, which is the primary and default storage tier used for the Object Storage.
   - **Enable Auto-Tiering**: Auto-Tiering helps you automatically move objects between Standard and Infrequent Access tiers based on their access patterns. Do not enable this field now.
   - **Enable Object Versioning**: Versioning directs object storage to automatically create an object version each time a new object is uploaded, an existing object is overwritten, or when an object is deleted. You can enable it while creating a bucket or later. Do not enable this field now.

- **Emit Object Events**: Emit Object Events lets the bucket to emit events for object state changes. Do not select this field now.
- **Encryption**: Buckets are encrypted with keys managed by Oracle by default, but you can optionally encrypt the data in this bucket using your own vault encryption key. Select the **Encrypt using Oracle managed keys** option.
- **Tags**: If you have permissions to create a resource, then you also have permissions to apply free-form tags to that resource. Skip this option. You can always apply tags later.

7. Click **Create**.

   The bucket is created immediately, and you can add objects to it.

Upload an Object to a Bucket

In this practice, you will upload an object to your bucket. Object Storage supports uploading individual files up to 10 TiB.

Before you upload an object to a bucket, you must have a bucket. In this case, you will use the bucket that is created from the previous practice.

Tasks

1. In the **Main Menu**, navigate to **Storage**, and then select **Buckets**.
2. Click the bucket **FRA-AA-LAB10-1-BKT-01-*xxx*** to view its details.
3. Under **Objects**, click **Upload**.
4. In the **Object Name Prefix** field, enter the file name prefix `oci/` for the files you plan to upload. This step is optional.
5. The **Storage Tier** field is populated as **Standard**. You can optionally change the storage tier (to Infrequent Access or Archive) to upload objects. In this case, keep it as **Standard**.
6. Select the objects to upload (browse any object from your local machine) by using one of the following options:
   - Drag files from your computer into the **Drop files here...** section.
   - Click the **Select Files** link to display a file selection dialog box.

     As you select files to upload, they are displayed in a scrolling list. If you decide that you do not want to upload a file that you have selected, click **X** to the right of the file name.

     If selected files to upload and files already stored in the bucket have the same name, warning messages to overwrite are displayed.
7. Click **Upload**.

   The selected objects are uploaded. Click **Close** to return to the bucket.

Configure a Lifecycle Policy Rules for the Bucket

In this practice, you will use Object Lifecycle Management to manage the object storage data. You will define a rule that automatically moves standard tier objects to the archive tier 90 days after creation or last update.

Before you configure a lifecycle policy rule for the bucket, you must have a bucket.

Tasks

1. In the **Main Menu**, navigate to **Storage**, then **Buckets**.
2. Click the bucket **FRA-AA-LAB10-1-BKT-01-*xxx*** to view its details.
3. Under **Resources** in the left navigation panel, click **Lifecycle Policy Rules** to access the lifecycle policy rule list.
4. Click **Create Rule**.

   The Console checks the IAM policies that are in place to ensure policy rule creation success.
5. Provide the following information:

   - **Name**: The system generates a default rule name that reflects the current year, month, day, and time. In this case, enter **`FRA-AA-LAB10-1-LPR-01`** as the name.
   - **Target**: Select the target to which the lifecycle rule applies. In this case, select **Objects**.
   - **Lifecycle Action**: If the rule target is Objects, you will get three options: Move to Archive, Move to Infrequent Access, and Delete. In this case, select **Move to Archive**.
   - **Number of Days**: This field implies the number of days until the specified action is taken. In this case, enter **`90`** days.

     Note: Values in the **Name** and **Target** fields are required.

6. Use **Object Name Filters** to specify the object where the lifecycle rule applies.

   You can choose objects using prefixes and pattern matching. If no name filter is specified, the rule applies to all objects in the bucket.

   To create an object name filter:

   - Click **Add Filter**.
   - Select the **Filter Type** - **Include by prefix**.
   - Enter the **Filter Value** - `oci/`.

7. Select whether the rule is enabled or disabled upon creation using the **State** selector. In this case, ensure that the State is **Enabled**.

8. Click **Create**.

The lifecycle policy rule is successfully configured for this bucket.

Create a Replication Policy for the Bucket

In this practice, you will create a replication policy to replicate objects in one bucket to another in a different region.

Before you configure a replication policy for the bucket, you must have two buckets in two different regions.

Please note that in our case Germany Central (Frankfurt) is the source region and we have selected US West (Phoenix) as the target region.

Note: This lab requires you to subscribe to two regions. Hence, you will not be able to perform it in Free Tier account.

Tasks

1. As a first step, you will create a destination bucket in the destination region. To do this:

   - In the console ribbon at the top of the screen, click the Region icon to expand the menu and select destination region **US West (Phoenix)** - PHX.
   - Create a destination bucket named **PHX-AA-LAB10-1-BKT-02-*xxx*** (specify a random number in place of xxx to make it unique) using the **Create an Object Storage bucket** practice instructions.

2. In the console ribbon at the top of the screen, click the Region icon to expand the menu. Select **Germany Central (Frankfurt)**.

3. In the **Main Menu**, navigate to **Storage**, then **Buckets**.

4. On the **Buckets** screen, click the bucket name **FRA-AA-LAB10-1-BKT-01-*xxx*** to view its details.

5. Under **Resources** in the left navigation panel, click **Replication Policy** to access the replication policy list.

6. Click **Create Policy**.

   The Console checks the IAM policies that are in place to ensure replication policy creation success.

7. In the **Create Replication Policy** dialog box, enter the following:

   - **Name**: The system generates a default policy name that reflects the current year, month, day, and time. Enter **`FRA-AA-LAB10-1-RP-01`** as the name.

   - **Destination Region**: This refers to the OCI region containing the destination bucket that you want to replicate to. Your tenancy must be subscribed to a region for you to replicate to that region. In this case, select **US West (Phoenix)**.

   - **Destination Bucket**: This refers to the name of the destination bucket for replication. Select the **PHX-AA-LAB10-1-BKT-02-*xxx*** bucket that is created in the destination region. Please note that the replication cannot automatically create the bucket.

     Note: Entry in the **Name** and **Destination Region** fields are required.

8. Click **Create**.

   After the policy is created, **Replication: Source** is added to the **Bucket Information** tab. The objects uploaded to the source bucket after policy creation are asynchronously replicated to the destination bucket.

9. Navigate back to the **Buckets** screen and click the bucket **FRA-AA-LAB10-1-BKT-01-*xxx***. Upload another object using **Upload Objects to a Bucket** practice instruction.

10. Navigate to the destination region using the region menu. In this case, it's **Phoenix** and click the bucket name **PHX-AA-LAB10-1-BKT-02-*xxx***.

11. Validate that the uploaded object to the source bucket **FRA-AA-LAB10-1-BKT-01-*xxx*** is asynchronously replicated to the destination bucket **PHX-AA-LAB10-1-BKT-02-*xxx***.

Create a Retention Rule for the Bucket

In this practice, you will create a time-bound retention rule to protect your data from accidental or malicious update, overwrite, or deletion.

Before you configure a retention rule for the bucket, you must have a bucket.

Tasks

1. In the **Main Menu**, navigate to **Storage**, then **Buckets**.
2. In the Console ribbon at the top of the screen, ensure you are in the correct region, Germany Central (Frankfurt).
3. Click the bucket name **FRA-AA-LAB10-1-BKT-01-*xxx*** created earlier to view its details.
4. Under **Resources** in the left navigation panel, click **Retention Rules** to access the retention rule list.
5. Click **Create Rule**.
6. In the **Create Retention Rule** dialog box, enter **`FRA-AA-LAB10-1-RR-01`** as the name.
7. Select **Retention Rule Type** that you want to create:

   - **Time-Bound**: These rules have a user-defined duration. The object modification is prevented for the duration specified. The duration is applied to each object individually and is based on the object's Last Modified timestamp.
   - **Indefinite**: These rules have no duration or expiration. The object modification is prevented until an indefinite rule is deleted.

   In this case, select **Time-Bound** retention rule type.
8. Enter the following retention rule duration attributes:
   - **Retention Time Amount**: 1
   - **Retention Time Unit**: Years

   The retention duration that you specify is applied to each object individually and is based on the object's Last Modified timestamp.

9. Do not select **Enable Retention Rule Lock**. When a rule is locked, only an increase in the retention duration is allowed and the rule can be deleted only by deleting the bucket. A bucket must be empty to be deleted.

10. Click **Create**.

11. Under **Resources** in the left navigation panel, click **Objects**.

12. Next, try deleting one of the objects uploaded in the earlier steps. To do this, click the ellipsis icon corresponding to an object and click **Delete**.

13. Click **Delete**.

    You will notice that the delete was unsuccessful. This is because if you have active retention rules, the actions that you can perform on a bucket are limited. You cannot update, overwrite, or delete objects or object metadata, or delete the bucket until the retention duration expires or the retention rule is deleted.

14. Click **Cancel.**