## Lab 2-01: Creating an S3 Lifecycle Policy to Optimize Costs

### Service Introduction

Amazon S3 Lifecycle policies help you manage your objects so that they are stored cost-effectively throughout their lifecycle. You can configure a lifecycle policy to transition objects between storage classes (like S3 Standard, S3 Standard-IA, S3 Glacier, etc.) or to expire no longer needed objects.

### Problem

You have a large number of data objects stored in Amazon S3, some of which are infrequently accessed yet must be retained for compliance or archival purposes. Keeping all these objects in the S3 Standard storage class is incurring high storage costs, and manually managing the data lifecycle is impractical.

### Solution

Implement an Amazon S3 Lifecycle policy to automatically transition infrequently accessed objects to lower-cost storage classes (such as S3 Standard-IA or S3 Glacier) and delete no longer needed objects. This will optimize your storage costs by ensuring that data is stored in the most cost-effective way, without manual intervention.

#### Task 1: Create an S3 Bucket and Upload Images

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| 1. In the AWS console, click on Services in the top-left corner, scroll down, and click on **Storage.** 2. Click on **S3**.      1. Click **Create bucket** in the top-right corner.      1. Under Create bucket, set the following values: 2. General configuration:  * Bucket name: fancybucketpants * AWS Region: ensure US East (N. Virginia) us-east-1 is selected      1. Leave the other settings as default, scroll down, and click **Create bucket.**      1. Click on the fancybucketpants bucket.      1. Click **Upload** in the top-right corner.      1. Click **Add files.**      1. Upload the flyingbear1.jpg image from the GitHub repository.      1. Click **Upload** to begin the upload process; this may take a few moments.      1. Once the image is successfully uploaded, click Close in the top-right corner. 2. Click **Upload.**      1. Click **Add files.**      1. Upload the flyingbears2.jpg image from the GitHub repository.      1. Click **Upload.** This may take a few moments.      1. Click **Close** in the top-right corner. 2. Create an Estimate in the AWS Pricing Calculator 3. Open the AWS Pricing Calculator by clicking on <https://calculator.aws/#/> 4. Click **Create estimate.**      1. In the AWS services search bar, enter **S3**, then click **Configure** under **Amazon Simple Storage Service (S3).**      1. Under Configure Amazon Simple Storage Service (S3), set the following values:  * Description: StandardOnly * Region: ensure US East (N. Virginia) is selected * S3 Standard:      * S3 Standard Storage: 50 GB per month * PUT, COPY, POST, LIST requests to S3 Standard: 100 * GET, SELECT, and all other requests from S3 Standard: 300      * Data Transfer: * Inbound Data Transfer: Internet (free) at 2 TB per month * Outbound Data Transfer: All other regions (0.02 USD per GB) at 2 TB per month      1. Scroll down to view the total monthly cost of **$42.11**, then click **Add to my estimate**. 2. In a separate text document, enter the total monthly cost of $42.11 to compare it to the other estimates you will be creating. |

#### Task 2: Create Transition Policy Creation

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| 1. In the S3 fancybucketpants bucket, navigate to the Management tab. 2. Under Lifecycle rules, click Create lifecycle rule.      1. Set the following values:  * Lifecycle rule name: StdToGlacier * Choose a rule scope: select Apply to all objects in the bucket  1. Ensure you click the check box stating: I acknowledge that this rule will apply to all objects in the bucket.      1. Lifecycle rule actions: select Move current versions of objects between storage classes 2. Transition current versions of objects between storage classes:  * Choose storage class transitions: Standard-IA * Days after object creation: 30      1. Click Add transition and select Glacier Deep Archive with 60 Days after object creation. 2. Click the check box next to **I acknowledge that this lifecycle rule will incur a one-time lifecycle request cost per object if it transitions small objects.** 3. Click **Create rule.**      1. Create an Estimate in the **AWS Pricing Calculator** 2. Navigate back to the **AWS Pricing Calculator.** 3. Navigate to My Estimate > Add service and search for S3 in the AWS services search bar. 4. Click **Configure** under Amazon Simple Storage Service (S3) and set the following values: 5. Description: leave this blank 6. Region: ensure US East (N. Virginia) is selected      1. Select S3 Storage classes and other features: toggle S3 Standard - Infrequent Access and S3 Glacier Deep Archive to the right to ensure they are selected      * S3 Standard: * S3 Standard Storage: 5 GB per month * PUT, COPY, POST, LIST requests to S3 Standard: 100 * GET, SELECT, and all other requests from S3 Standard: 300      * S3 Standard - Infrequent Access (S3 Standard-IA): * S3 Infrequent Access storage: 5 GB per month * PUT, COPY, POST, LIST requests to S3 Standard - Infrequent Access: 100 * GET, SELECT, and all other requests from S3 Standard - Infrequent Access: 25 * Lifecycle Transition requests: 100 * Data retrievals: 1 GB per month      * S3 Glacier Deep Archive: * S3 Glacier Deep Archive storage: 40 GB per month * S3 Glacier Deep Archive Average Object Size: 16 MB * PUT, COPY, POST, LIST requests to S3 Glacier Deep Archive: 100 * Lifecycle Transitions into S3 Glacier Deep Archive: 100      * Data Transfer: * Inbound Data Transfer: Internet (free) at 2 TB per month * Outbound Data Transfer: All other regions (0.02 USD per GB) at 2 TB per month      1. Click Add to my estimate. 2. In a separate text document, enter the total monthly cost of $41.19 to compare it to the other estimates you will be creating. |

#### Task 3: Create An Expiration Policy Creation

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| 1. Click **Create lifecycle rule** in the S3 fancybucketpants bucket under **Lifecycle configuration > Lifecycle rules.**      1. Under **Create lifecycle rule,** set the following values:  * Lifecycle rule name: Expiration * Choose rule scope: select Apply to all objects in the bucket  1. Ensure you click the check box stating: **I acknowledge that this rule will apply to all objects in the bucket.**      * Lifecycle rule actions: Expire current versions of objects * Expire current versions of objects: enter 90 Days after object creation      1. Click **Create rule.**      1. Click **Create lifecycle rule.**      1. Set the following values:  * Lifecycle rule name: TransitionToExpiration * Choose a rule scope: select Apply to all objects in the bucket  1. Ensure you click the check box stating: **I acknowledge that this rule will apply to all objects in the bucket.**      1. Lifecycle rule actions: select Move current versions of objects between storage classes and Expire current versions of objects 2. Transition current versions of objects between storage classes:  * Choose storage class transitions: Standard-IA * Days after object creation: 30  1. Click Add transition and select Glacier Deep Archive with 60 Days after object creation.      1. Click the check box next to **I acknowledge that this lifecycle rule will incur a one-time lifecycle request cost per object if it transitions small objects.** 2. Expire current versions of objections: **90** Days after object creation      1. Click on **Create rule.**      1. Select the **StdToGlacier rule.**      1. Click **Delete** and confirm deletion.      1. Select the **ExpirationRule rule.**      1. Confirm the deletion by clicking **Delete** in the Delete lifecycle rule.      1. Click on the TransitionToExpiration rule name and click View details.      1. Create an Estimate in the **AWS Pricing Calculator** 2. Navigate back to the **AWS Pricing Calculator.** Navigate to My Estimate > Add service and search for S3 in the AWS services search bar. 3. Click **Configure** under Amazon Simple Storage Service (S3)      1. Set the following values:  * Description: TransitionToExpiration * Region: ensure US East (N. Virginia) is selected * Select S3 Storage classes and other features: toggle S3 Standard - Infrequent Access and S3 Glacier Deep Archive to the right to ensure they are selected * S3 Standard:      * S3 Standard Storage: 5 GB per month * PUT, COPY, POST, LIST requests to S3 Standard: 100 * GET, SELECT, and all other requests from S3 Standard: 300      * S3 Standard - Infrequent Access (S3 Standard-IA): * S3 Infrequent Access storage: 5 GB per month * PUT, COPY, POST, LIST requests to S3 Standard - Infrequent Access: 100 * GET, SELECT, and all other requests from S3 Standard - Infrequent Access: 25 * Lifecycle Transition requests: 100 * Data retrievals: 1 GB per month      * S3 Glacier Deep Archive: * S3 Glacier Deep Archive storage: 10 GB per month * S3 Glacier Deep Archive Average Object Size: 16 MB * PUT, COPY, POST, LIST requests to S3 Glacier Deep Archive: 100 * Lifecycle Transitions into S3 Glacier Deep Archive: 100      * Data Transfer: * Inbound Data Transfer: Internet (free) at 2 TB per month * Outbound Data Transfer: All other regions (0.02 USD per GB) at 2 TB per month      1. Click **Add** to my estimate. 2. Enter the total monthly cost of $41.16 in a separate text document and compare it to the other estimates you created. |