



Discipline

Use case for Storage Class

CS5002

Activity-7

❖ Problem Statement:

Give 1 use case for each storage class and cost for 5.5 Storage Class and cost for 5.5 GB storage data with 65,400 objects in it 75 days.

❖ Solution:

➤ S3 Storage Class:

Each object in Amazon S3 has a storage class associated with it. Amazon S3 offers a range of storage classes for the objects that we store. All of these storage classes offer high durability (except for RRS).

We choose a class depending on our 2 factors:

1. Use case scenario
2. Performance access requirements.

The following are details of the various storage classes: -

➤ S3 Standard:

The default storage class. If we don't specify the storage class when we upload an object, Amazon S3 assigns the S3 Standard as default storage class.

1. Use Case:

We use S3 Standard for performance-sensitive use cases i.e., those that require:

1. Millisecond access time i.e., fast access
2. Frequent accessing of data.
3. When no deep understanding of your data access patterns is required.

Note: Although Reduced-Redundancy Storage (RRS) could also be one option to use but we don't use it mainly for two reasons:

1. S3 Standard storage class is more cost effective.
2. RRS is less durable as compared to S3 Standard.

2. Cost for 5.5 GB:

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AWS Pricing Calculator > My Estimate > Add Amazon Simple Storage Service (S3)

Step 1
Select service

Step 2
Configure Amazon Simple Storage Service (S3)

Configure Amazon Simple Storage Service (S3)

Description

This is for S3 Standard Storage Class

Region Info

It is a physical location around the world where AWS clusters data centers.

Asia Pacific (Mumbai)

Select S3 Storage classes and other features Info

Select AWS services that you want to estimate

☒ S3 Standard

☐ S3 Intelligent - Tiering

☐ S3 Standard - Infrequent Access

☐ S3 One Zone - Infrequent Access

☐ S3 Glacier

☐ S3 Glacier Deep Archive

☐ S3 Management and Analytics

☐ S3 Object Lambda

☐ Data Transfer

S3 Standard

▼ S3 Standard Info

The calculations below exclude Free Tier discounts.

S3 Standard storage

5.5GB per month

PUT, COPY, POST, LIST requests to S3 Standard

0

GET, SELECT, and all other requests from S3 Standard

65400

Data returned by S3 Select

5.5GB per month

Data scanned by S3 Select

5.5GB per month

Show calculations

S3 Standard estimate

Total monthly cost:0.18 USD

Amazon Simple Storage Service (S3) estimate

Total monthly cost:0.18 USD

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My Estimate Edit

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Estimate summary Info

Upfront cost0.00 USD

Monthly cost0.53 USD

Total 12 months cost6.36 USD

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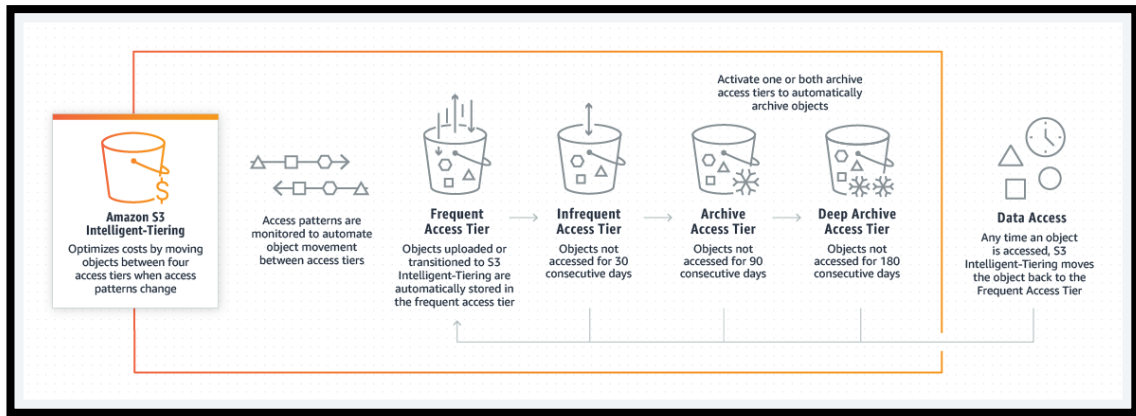
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➤ S3 Intelligent-Tiering:

Well, to understand this storage class we first need to understand access tiers:



So, S3 Intelligent-Tiering is a storage class that is designed to optimize storage costs by automatically moving data to the most cost-effective access tier without performance impact or operational overhead. S3 Intelligent-Tiering was added to Amazon S3 to solve the problem of using the right storage class and optimizing costs when access patterns are irregular.

3. Use Case:

It includes almost all properties of S3 Standard plus it includes some extra properties which is why we call it S3 intelligent. So, we use S3 Intelligent-Tiering for automatic optimization of our data i.e.:

1. Millisecond access time i.e., fast access.
2. Frequent accessing of data.
3. When deep understanding of your data access patterns is required.
4. It will automatically archive objects that are rarely accessed.
5. These new optimizations will “reduce the amount of manual work” you need to do to archive objects with unpredictable access patterns and that are not accessed for months at a time.

6. This is the perfect storage class when you want to optimize storage costs for data that has unknown or unpredictable access patterns.
7. For a small monthly object monitoring and automation fee, S3 Intelligent-Tiering monitors the access patterns and moves the objects automatically from one tier to another.
8. There is no retrieval fee in S3 Intelligent-Tiering and no fee for moving data between tiers.

4. Cost for 5.5 GB:

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AWS Pricing Calculator

>

My Estimate

>

Add Amazon Simple Storage Service (S3)

Step 1

Select service

Step 2

Configure Amazon Simple Storage Service (S3)

Configure Amazon Simple Storage Service (S3)

Info

Description

This is for S3 Intelligent Storage Class

Region

Info

It is a physical location around the world where AWS clusters data centers.

Asia Pacific (Mumbai)

Select S3 Storage classes and other features

Info

Select AWS services that you want to estimate

☐ S3 Standard

☒ S3 Intelligent - Tiering

☐ S3 Standard - Infrequent Access

☐ S3 One Zone - Infrequent Access

☐ S3 Glacier

☐ S3 Glacier Deep Archive

☐ S3 Management and Analytics

☐ S3 Object Lambda

☐ Data Transfer

S3 Intelligent - Tiering

▼ S3 Intelligent-Tiering (S3 INT)

Info

S3 Intelligent-Tiering automatically moves objects between four access tiers when access patterns change. Objects uploaded or transitioned to S3 Intelligent-Tiering are automatically stored in the Frequent Access tier. S3 Intelligent-Tiering moves objects that have not been accessed in 30 consecutive days to the Infrequent Access tier. Once you have activated one or both of the archive access tiers, S3 Intelligent-Tiering will move objects that haven't been accessed for 90 consecutive days to the Archive Access tier and then after 180 consecutive days of no access to the Deep Archive Access tier. If the objects are accessed later, S3 Intelligent-Tiering moves the objects back to the Frequent Access tier. There are no retrieval fees when using the S3 Intelligent-Tiering storage class, and no additional tiering fees when objects are moved between access tiers within S3 Intelligent-Tiering.

S3 INT storage

5.5

GB per month

Percentage of Storage in INT-Frequent Access Tier (% of Frequent Access Storage accessed in a 30 day period)

Assumes no range GETs and that objects are only retrieved once per 30 day period.

100

%

Percentage of Storage in INT-Infrequent Access Tier (% of Infrequent Access Storage accessed in a 30 day period)

Assumes no range GETs and that objects are only retrieved once per 30 day period.

%

Percentage of Storage in INT-Archive Access Tier (% of Archive Access Storage accessed in a 30 day period)

Assumes no range GETs and that objects are only retrieved once per 30 day period.

%

Percentage of Storage in INT-Deep Archive Access Tier (% of Deep Archive Access Storage accessed in a 30 day period)

Assumes no range GETs and that objects are only retrieved once per 30 day period.

%

Monitoring and Automation (objects per month)

65400

PUT, COPY, POST, LIST requests to S3 INT

0

GET, SELECT, and all other requests from S3 INT

65400

Lifecycle Transition requests

Enter the amount transitioning from S3 Standard or S3 IA into S3 INT.

0

Data returned by S3 Select

5.5

GB per month

Data scanned by S3 Select

5.5

GB per month

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S3 Intelligent - Tiering estimate

Total monthly cost: 0.35 USD

Amazon Simple Storage Service (S3) estimate

Total monthly cost: 0.35 USD

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Successfully added Amazon Simple Storage Service (S3) estimate.

AWS Pricing Calculator > My Estimate

My Estimate [edit](#)

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Estimate summary [Info](#)

Upfront cost	Monthly cost	Total 12 months cost
0.00 USD	0.35 USD	4.20 USD

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Note: In above storage class the cost change (usually increases) with change in data percentage among different tier.

➤ S3 Standard-IA

The S3 Standard-IA storage classes are designed for long-lived and infrequently accessed data. (IA stands for *infrequent access*), S3 Standard-IA objects are available for millisecond access (similar to the S3 Standard storage class). Amazon S3 charges a retrieval fee for these objects, so they are most suitable for infrequently accessed data.

5. Use Case:

It is basically used for Infrequently accessed data. For example, you might choose the S3 Standard-IA storage classes to do the following:

1. For storing backups i.e., Use for your primary or only copy of data that can't be re-created.
2. For older data that is accessed infrequently, but that still requires millisecond access. For example, when you upload data, you might choose the S3 Standard storage class, and use lifecycle configuration

to tell Amazon S3 to transition the objects to the S3 Standard-IA or S3 One Zone-IA class.

6. Cost for 5.5 GB:

Configure Amazon Simple Storage Service (S3)

Description

Enter a description for your estimate

Region [Info](#)

It is a physical location around the world where AWS clusters data centers.

Asia Pacific (Mumbai)

Select S3 Storage classes and other features [Info](#)

Select AWS services that you want to estimate

☐ S3 Standard ☐ S3 Intelligent - Tiering ☒ S3 Standard - Infrequent Access

☐ S3 One Zone - Infrequent Access ☐ S3 Glacier ☐ S3 Glacier Deep Archive

☐ S3 Management and Analytics ☐ S3 Object Lambda ☐ Data Transfer

S3 Standard - Infrequent Access

▼ S3 Standard - Infrequent Access (S3 Standard-IA) [Info](#)

S3 Infrequent Access storage

5.5 GB per month

PUT, COPY, POST, LIST requests to S3 Standard - Infrequent Access

0

GET, SELECT, and all other requests from S3 Standard - Infrequent Access

65400

Lifecycle Transition requests

0

Data retrievals

5.5 GB per month

Data returned by S3 Select

5.5 GB per month

Data scanned by S3 Select

5.5 GB per month

S3 Standard - Infrequent Access estimate

Total monthly cost: 0.29 USD

Amazon Simple Storage Service (S3) estimate

Total monthly cost: 0.29 USD

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Estimate summary [Info](#)

Upfront cost	Monthly cost	Total 12 months cost
0.00 USD	2.25 USD	26.98 USD

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➤ S3 One Zone IA

This storage class is also used for saving Infrequently Accessed data similar to S3 Standard-IA but the difference is:-

1. Amazon S3 stores the object data in only one Availability Zone, which makes it less expensive than S3 Standard-IA. However, the data is not resilient to the physical loss of the Availability Zone resulting from disasters, such as earthquakes and floods.

7. Use Case:

It is basically used for Infrequently accessed data. For example, you might choose the S3 One Zone IA storage classes to do the following:

1. For Use if you can re-create the data if the Availability Zone fails, and for object replicas when setting S3 Cross-Region Replication (CRR).
2. For older data that is accessed infrequently, but that still requires millisecond access. i.e., For Fast Access.

8. Cost for 5.5 GB:

The screenshot shows the AWS Pricing Calculator interface. The top navigation bar includes the AWS logo, 'pricing calculator', and links for 'Feedback', 'English', and 'Contact Sales'. The main content area is titled 'Configure Amazon Simple Storage Service (S3)' and includes a 'Description' field with the text 'This is S3 One Zone'. Below this is a 'Region' dropdown menu set to 'Asia Pacific (Mumbai)'. A section titled 'Select S3 Storage classes and other features' contains a grid of radio buttons for various S3 options. The 'S3 One Zone - Infrequent Access' option is selected. The bottom of the configuration area shows the selected option: 'S3 One Zone - Infrequent Access'.

aws pricing calculator

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AWS Pricing Calculator > My Estimate > Add Amazon Simple Storage Service (S3)

Step 1
Select service

Step 2
Configure Amazon Simple Storage Service (S3)

Configure Amazon Simple Storage Service (S3) Info

Description

This is S3 One Zone

Region Info
It is a physical location around the world where AWS clusters data centers.
Asia Pacific (Mumbai)

Select S3 Storage classes and other features Info
Select AWS services that you want to estimate

<input type="radio"/> S3 Standard	<input type="radio"/> S3 Intelligent - Tiering	<input type="radio"/> S3 Standard - Infrequent Access
<input checked="" type="radio"/> S3 One Zone - Infrequent Access	<input type="radio"/> S3 Glacier	<input type="radio"/> S3 Glacier Deep Archive
<input type="radio"/> S3 Management and Analytics	<input type="radio"/> S3 Object Lambda	<input type="radio"/> Data Transfer

S3 One Zone - Infrequent Access

▼ S3 One Zone - Infrequent Access (S3 One Zone-IA) [Info](#)

S3 One Zone-IA storage

5.5

GB per month

PUT, COPY, POST, LIST requests to S3 One Zone - Infrequent Access

0

GET, SELECT, and all other requests from S3 One Zone - Infrequent Access

65400

Lifecycle Transition requests

0

Data Retrievals

5.5

GB per month

Data returned by S3 Select

5.5

GB per month

Data scanned by S3 Select

5.5

GB per month

S3 One Zone - Infrequent Access estimate

Total monthly cost:

0.27 USD

Amazon Simple Storage Service (S3) estimate

Total monthly cost:

0.27 USD

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Successfully added Amazon Simple Storage Service (S3) estimate.

AWS Pricing Calculator > My Estimate

My Estimate

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Estimate summary [Info](#)

Upfront cost

0.00 USD

Monthly cost

1.96 USD

Total 12 months cost

23.50 USD

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➤ S3 Glacier:

The S3 Glacier storage classes are designed for low-cost data archiving. These storage classes offer the same durability and resiliency as the S3 Standard storage class.

9. Use Case:

It is basically used to store Archived data, i.e. the data which we are going to access rarely.

1. Use for archives where portions of the data might need to be retrieved in minutes.

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2. Data stored in the S3 Glacier storage class has a minimum storage duration period of 90 days and can be accessed in as little as 1-5 minutes using expedited retrieval.
3. If you have deleted, overwritten, or transitioned to a different storage class an object before the 90-day minimum, you are charged for 90 days.

10. Cost for 5.5 GB:

The screenshot shows the AWS Pricing Calculator interface for configuring Amazon Simple Storage Service (S3). The interface is divided into two main sections: configuration and the resulting estimate.

Configuration Section:

- Step 1: Select service** - Configure Amazon Simple Storage Service (S3)
- Step 2: Configure Amazon Simple Storage Service (S3)**
 - Description:** Enter a description for your estimate.
 - Region:** Asia Pacific (Mumbai)
 - Select S3 Storage classes and other features:**
 - ☐ S3 Standard
 - ☐ S3 Intelligent - Tiering
 - ☐ S3 Standard - Infrequent Access
 - ☐ S3 One Zone - Infrequent Access
 - ☒ S3 Glacier
 - ☐ S3 Glacier Deep Archive
 - ☐ S3 Management and Analytics
 - ☐ S3 Object Lambda
 - ☐ Data Transfer
 - S3 Glacier Settings:**
 - S3 Glacier storage:** 5.5 GB per month
 - PUT, COPY, POST, LIST requests to S3 Glacier:** 0
 - Lifecycle Transitions into S3 Glacier:** 0
 - Restore requests (Standard):** 0
 - Restore requests (Expedited):** 0
 - Restore requests (Bulk):** 65400
 - Data retrieval (Standard):** 0 GB per month
 - Data retrieval (Expedited):** 0 GB per month
 - Data retrieval (Bulk):** 5.5 GB per month
 - Provisioned Capacity Units:** 0

Estimate Section:

- My Estimate:** Edit
- Estimate summary:**
 - Upfront cost: 0.00 USD
 - Monthly cost: 3.32 USD
 - Total 12 months cost: **39.84 USD**
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➤ S3 Glacier Deep Archive:

S3 Glacier Deep Archive is the lowest cost storage option in AWS. Storage costs for S3 Glacier Deep Archive are less expensive than using the S3 Glacier storage class. We can reduce S3 Glacier Deep Archive retrieval costs by using bulk retrieval, which returns data within 48 hours.

This storage classes are similar to S3 Glacier and offer the same durability and resiliency as that of S3 Standard storage class.

It differs from S3 Glacier in a way that its retrieval time is in hours (default 12 hours) rather than minutes.

11. Use Case:

It is basically used for storing Archived data, i.e., the data which we are going to access rarely.

1. Use for archives where delay in time for data retrieval is not the issue.
2. Its minimum storage duration period of 180 days and a default retrieval time of 12 hours.

12. Cost for 5.5 GB:

The screenshot shows the AWS Pricing Calculator interface. The main heading is "Configure Amazon Simple Storage Service (S3)". Under "Description", it says "THIS CALCULATION is for Glacier Deep Archive". The "Region" is set to "US East (Ohio)". Under "Select S3 Storage classes and other features", the following options are listed with radio buttons: S3 Standard, S3 One Zone - Infrequent Access, S3 Management and Analytics, S3 Intelligent - Tiering, S3 Glacier, S3 Object Lambda, S3 Standard - Infrequent Access, S3 Glacier Deep Archive (which is selected), and Data Transfer.

S3 Glacier Deep Archive

▼ S3 Glacier Deep Archive [Info](#)

Storage Settings

S3 Glacier Deep Archive storage: 5.5 GB per month

PUT, COPY, POST, LIST requests to S3 Glacier Deep Archive: 0

Lifecycle Transitions into S3 Glacier Deep Archive: 0

Restore requests (Standard): Enter amount of requests

Restore requests (Bulk): 65400

Data retrievals (Standard): Enter amount GB per month

Data retrievals (Bulk): 5.5 GB per month

► Show calculations

S3 Glacier Deep Archive estimate

Total monthly cost: 1.65 USD

Amazon Simple Storage Service (S3) estimate

Total monthly cost: 1.65 USD

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☑ Successfully added Amazon Simple Storage Service (S3) estimate. ✕

AWS Pricing Calculator > My Estimate

My Estimate [Edit](#) [Add service](#) [Add support](#) [Add group](#) [Clear estimate](#) [Export estimate](#) [Share](#)

Estimate summary [Info](#)

Upfront cost	Monthly cost	Total 12 months cost
0.00 USD	1.65 USD	19.80 USD

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➤ Conclusion:

1. There exist different storage classes each with their pros and cons so it depends on the need and priority of the user that which type of storage class he/she should opt for.
2. We need to decide between these things size, time and cost. These are the major factors which shape our decision in choosing a Aws Cloud Storage. Example: S3 Glacier deep Archive is less expensive to that of S3 Glacier.