**Cost Optimization for AWS**

1. **S3 life cycle**
2. **Trusted adviser**
3. **Reserved instance**

S3 automatically stores objects in three access tiers: a Frequent Access tier, an Infrequent Access tier, and a Archive Instant Access tier.

1. **S3 life cycle cost optimization mainly depend on the storage class**

Amazon S3 provides the following storage classes:

* **S3 Standard IA** — Frequently accessed data (more than once a month) with millisecond access, The default storage class. If you don't specify the storage class when you upload an object, Amazon S3 assigns the S3 Standard storage class.

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| S3 Standard - General purpose storage for any type of data, typically used for frequently accessed data |  |
| First 1 TB / Month ----- $25.6 | $0.025 per GB |
| Next 1 TB / Month ----- $24 | $0.024 per GB |

* **S3 Intelligent - Tiering** - Automatic cost savings for data with unknown or changing access patterns. automatically stores objects a Frequent Access tier,. Objects that are uploaded or transitioned to S3 Intelligent-Tiering are automatically stored in the Frequent Access tier.

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| Frequent access Tier, First 1 TB / Month ----$25.6 | $0.025 per GB |
| Next 1 TB / Month ---- $24 | $0.024 per GB |
| Infrequent Access Tier, All Storage / Month ---- $13.8 |  |

* **S3 One Zone-IA** ---  storage classes are designed for long-lived and infrequently accessed data. S3 One Zone-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. For pricing information,
* S3 One Zone-IA storage classes are suitable for objects larger than 128 KB that you plan to store for at least 30 days. If an object is less than 128 KB, Amazon S3 charges you for 128 KB. If you delete an object before the end of the 30-day minimum storage duration period, you are charged for 30 days. For pricing information
* S3 One Zone-IA — Use if you can re-create the data if the Availability Zone fails, and for object replicas when setting S3 Cross-Region Replication
* **S3 Glacier Instant** — Recreatable, infrequently accessed data (once a month) with millisecond access. Data stored in the S3 Glacier Instant Retrieval storage class offers a cost savings compared to the S3 Standard-IA storage class, with the same latency and throughput performance as the S3 Standard-IA storage class. S3 Glacier Instant Retrieval has higher data access costs than S3 Standard-IA. For pricing information.

All Storage / Month ------- $0.005 per GB

* **S3 Glacier Flexible** — Long-lived archive data accessed once a year with retrieval times of minutes to hours. Data stored in the S3 Glacier Flexible Retrieval 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. The retrieval time is flexible, and you can request free bulk retrievals in up to 5-12 hours. 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. For pricing information.
* **S3 Glacier Deep Archive** — Long-lived archive data accessed less than once a year with retrieval times of hours. S3 Glacier Deep Archive is the lowest cost storage option in AWS. S3 Glacier Deep Archive storage class has a minimum storage duration period of 180 days and you can reduce S3 Glacier Deep Archive retrieval costs by using bulk retrieval, which returns data within 48 hours. If you have deleted, overwritten, or transitioned to a different storage class an object before the 180-day minimum, you are charged for 180 days.

For Example : Standard have price 10R per GB intelligent have 7R,Standard IA

* **Trusted Adviser--** Trusted Advisor **provides recommendations that help you follow AWS best practices**. Trusted Advisor evaluates your account by using checks. These checks identify ways to optimize your AWS infrastructure, improve security and performance, reduce costs, and monitor service quotas.
* AWS environment, and then makes recommendations when opportunities exist to save money, improves system availability and performance, or help close security gaps.
* If you have a Basic or Developer Support plan, you can use the Trusted Advisor console to access all checks in the Service Limits category and six checks in the Security category.
* If you have a Business, Enterprise Support plan, you can use the Trusted Advisor console and the aws api support  to access all Trusted Advisor checks. You also can use Amazon CloudWatch Events to monitor the status of Trusted Advisor checks.
* You can access Trusted Advisor in the AWS Management Console.

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# Amazon EC2 Reserved Instances & RDS

Amazon EC2 Reserved Instances (RI) provide a significant discount (up to 72%) compared to On-Demand pricing and provide a capacity reservation when used in a specific Availability Zone.

When the attributes of the RI match the attributes of a used instance, the discount of the RI is applied and the capacity reservation is utilized. These attributes are:

* [Instance type](https://aws.amazon.com/ec2/instance-types/): Instance types comprise varying combinations of CPU, memory, storage, and networking capacity. For example, m4.2xlarge.
* Platform description: RIs can be purchased for Amazon EC2 instances running Linux/UNIX, SUSE Linux, Red Hat Enterprise Linux, Microsoft Windows Server, and Microsoft SQL Server platforms.
* Tenancy: If you are using instances with a default tenancy, purchase default tenancy Reserved Instances. If you are using dedicated instances, purchase Reserved Instances with a tenancy of dedicated.
* Availability Zone (optional): By selecting an Availability Zone, the RI you purchase will provide a capacity reservation and a discount for the use of instances in the selected Availability Zone. When an Availability Zone isn’t specified, the RI discount will apply to a running instance of any size (within the same family) in the region. As an example, let’s say you own an m4.2xlarge Linux/UNIX RI with default tenancy in US East (N.Virginia). Then this RI’s discounted rate can automatically apply to two m4.xlarge instances in us-east-1a or four m4.large instances in us-east-1b.