# AWS Cost Optimization: Your To-Do List


AWS Cost Optimization

Cost optimization is one of the most important topics in the cloud environment. It can be painful and scary at the end of the month if we're using every AWS resource without thinking about costs. To prevent this terrible process, we will mention about some configurations and services that we should use and think in the AWS Cost Optimization process. Let's start!

## 1) Remove Unused AWS Resources:

### Unused AWS EBS Volumes:


AWS EBS Volumes

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Unused AWS EBS volumes contribute to AWS costs. AWS EBS volume costs and AWS EC2 costs are independent of each other. Therefore, even if the EC2 instance is terminated, the EBS volumes are stored unless we select the Delete on Termination option at launch. So, we need to check our unused AWS EBS volumes that can be stored because of terminated old AWS EC2 instances and delete them. This can be a huge difference in our monthly bills.

### Unused Elastic IPs:

Elastic IP addresses are public IPv4 addresses that are allocated to an instance so it can be accessed from the Internet. An Elastic IP address doesn't incur charges when these statements are true:

- The Elastic IP address is associated with an EC2 instance and the instance is running state.
- The instance has only one Elastic IP address attached to it.
- The Elastic IP address is associated with an attached network interface.

We need to pay some costs for each Elastic IP address that doesn't meet these conditions. We can stop the charges by releasing the IP address if we're not using these. To release Elastic IPs, please follow these instructions.

### Unused running EC2 Instances:

Sometimes we create some AWS EC2 instances that are running for testing some code, application, etc. We should terminate every EC2 instance if we're not using them. They could cause unnecessary costs with running minutes/hours.

## 2) Use Saving Plans & Reserved Resources:

To use saving plans & reserved instances, firstly, we need to decide our requirements. We need to purchase instances that suit our organizational needs. One of the best ways to minimize AWS costs is to purchase Reserved Instances whenever possible. AWS lets us reserve instances for a period of 1–3 years and receive discounts of up to 75%. In a reserved instance model, if we need to scale down, we cannot release of the reserved instances. That's why it's so important to determine our requirements in the right way. We do not want to pay for the instances that we will not use later. In addition to this, AWS offers "Savings Plans". It is a flexible pricing model with compute usage savings of up to 72%. It lets us reduce costs for AWS Lambda, AWS Fargate, and Amazon EC2 instances.

## 3) Think AWS Trusted Advisor:

AWS Trusted Advisor provides recommendations that help us follow AWS best practices. In addition to performance, security, and fault tolerance we're getting recommendations for cost optimization. We can use AWS Trusted Advisor to view your expense forecast and find unused resources.

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AWS Trusted Advisor

## 4) Configure Auto Scaling:

AWS Auto Scaling

It's important to know our architectural design and requirements for cost optimization. Sometimes we can use smaller instances instead of larger ones (larger ones can be expensive), which can reduce our costs. Also, instead of our all instances always running, we can configure AWS Auto scaling that run the instances when needed in production. What can we do for the test environment? The answer is easy: We can set cron jobs for these test instances that can be shut down when not in use or during non-working hours.

## 5) Use AWS Cost Management Tools:

Here are some tips for AWS Cost Management Tools:

- We can analyze our expenses with the Cost and Usage report.
- We can create budget plans for our resources.
- We can take advantage of the AWS Cost Explorer to understand the right on-demand, spot, and reserved instances using EC2 pricing models.
- We can use AWS Cost Anomaly Detection for automated cost anomaly detection and root cause analysis.

## 6) Set your alarms with AWS CloudWatch:

We can monitor our estimated AWS charges by using AWS CloudWatch. When we enable the monitoring of estimated charges for your AWS account, the estimated charges are calculated and sent several times daily to CloudWatch as metric data.


AWS CloudWatch Billing Alarm

The alarm triggers when our account billing exceeds the threshold we specify. We can create an alarm when the billing exceeds $10, $100, and $1000. You can follow the instructions here.

## 7) Create AWS S3 Buckets for Storage:

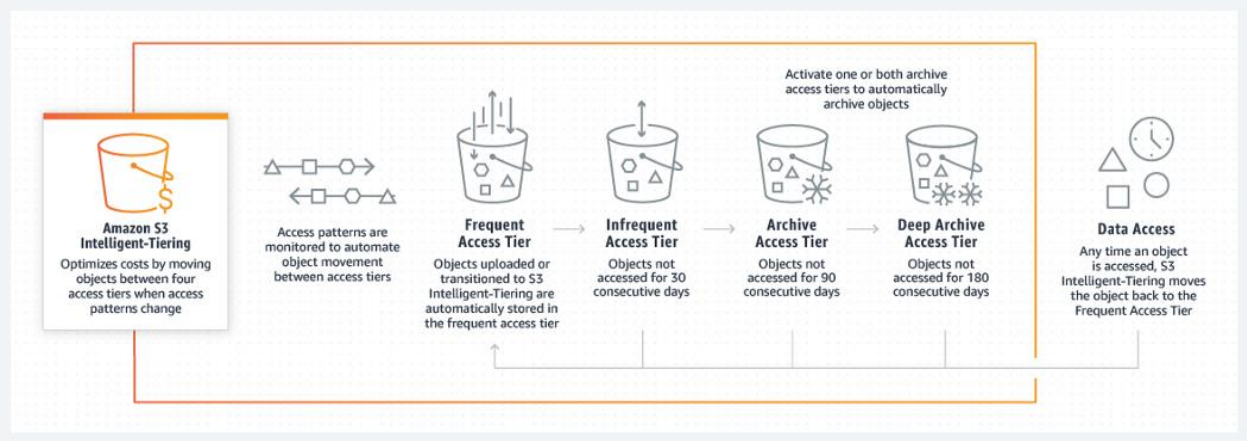
Instead of EC2 for storing our objects (our documents, photos, code snippets) we need to think AWS S3 first.

*Amazon Simple Storage Service (Amazon S3) is an object storage service offering industry-leading scalability, data availability, security, and performance. Customers of all sizes and industries can store and protect any amount of data for virtually any use case, such as data lakes, cloud-native applications, and mobile apps. With cost-effective storage classes and easy-to-use management features, you can optimize costs, organize data, and configure fine-tuned access controls to meet specific business, organizational, and compliance requirements.*

AWS S3 currently offers six tiers of storage at different price points:

- S3 Standard
- S3 Intelligent Tiering
- S3 Infrequent Access
- S3 Infrequent Access (Single Zone)

- S3 Glacier
- S3 Deep Archive Glacier




AWS S3 Storage Tiers

We need to determine which storage tier is most suitable for our data will depend on factors such as how often data is accessed and how quickly a business would need to retrieve data in the event of a disaster.

## 8) Use AWS Organizations:

AWS Organizations

We can automate account creation, create groups of accounts, and govern these groups with AWS Organizations. AWS Organizations also

help us to prevent configuring unnecessary AWS services with SCP. In addition to these, the consolidated billing feature consolidates the charges for all our accounts, making it easier to get an overview of our costs and manage our whole bill. If we have lots of AWS accounts, we need to think about using AWS Organizations.

## 9) Think serverless first:

Instead of using huge EC2 instances, RDS databases, using serverless technologies such as AWS Lambda, DynamoDB, and Fargate can be lifesavers for functional requirements and cost management. If we're building a new environment, we need to think serverless first. If we're migrating our environment, again, we need to think serverless first.

## 10) Get AWS Credits:

There are several ways we can get free credits from AWS. We can use them for reducing our bills.


AWS Credits

- **Attend AWS Webinars:** Webinars not only offer users the chance to learn something, but they can also get free AWS credits.
- **Attend AWS Events:** AWS cloud participates in several cloud events, some of which are internal events and conferences. AWS can only organize a few big events a year. We can get some free credits from them.