

Handling AWS EC2 Instance Shutdown & Reboot Issues

Issue 1: What Happens When an EC2 Instance Stops?

When you stop an AWS EC2 instance, the data stored on it is lost unless you save a backup.

Solution: Create an Amazon Machine Image (AMI) & Store It in Amazon S3

An AMI (Amazon Machine Image) is a snapshot of your EC2 instance that lets you restore it later or launch new instances with the same setup.

1. Go to AWS EC2 Dashboard
 - Log in to AWS Console.
 - Click EC2 under "Services"
 - Find your running instance
2. Create an AMI
 - Select your instance
 - Click Actions -> Image and templates -> Create Image
 - Provide a Name & Description for the backup
 - Click Create Image
3. Verify the AMI is Created
 - In the EC2 dashboard, go to AMIs
 - You should see your AMI listed

How to Restore an EC2 Instance from an AMI

If your instance stops or is deleted, you can launch a new one using your saved AMI.

1. Go to EC2 Dashboard -> Click AMIs
2. Find your saved AMI and click Launch Instance from Image
3. Choose the instance type (e.g., t2.micro for free-tier)
4. Click Launch -> Your new instance will be ready!

How to Store AMI in Amazon S3 for Long-Term Backup

To store the AMI in Amazon S3 for safety:

1. Open the EC2 dashboard and go to AMIs
2. Copy the AMI ID

Run this command in AWS CLI (Command Line Interface):

```
"aws ec2 create-store-image-task --image-id ami-XXXXXXXX --bucket my-s3-bucket"
```

3. Replace ami-XXXXXXXX with your AMI ID. Replace my-s3-bucket with your S3 bucket name.

Your AMI is now securely stored in S3!

Cost Analysis for AMI & S3 Backup

Service	Cost
First AMI	Free (1GB/month)
Additional AMI storage	~\$0.05 per GB
S3 Standard storage	~\$0.023 per GB/month
S3 Glacier (long-term backup)	~\$0.004 per GB/month

Issue 2: What Happens When You Reboot an EC2 Instance?

When you restart an EC2 instance:

Your data remains intact

Your public IP address changes (your website's URL will break)

Solution: Use an Elastic IP for a Static IP Address

An Elastic IP (EIP) gives your instance a permanent public IP.

1. Go to AWS EC2 Dashboard -> Click Elastic IPs
2. Click Allocate Elastic IP Address
3. Click Allocate -> AWS will assign you a static IP
4. Associate the Elastic IP with Your Instance
 - Select your Elastic IP
 - Click Actions -> Associate Elastic IP
 - Choose your EC2 Instance ID
 - Click Associate

Now, even if you reboot the instance, your IP stays the same!

Cost Analysis for Elastic IP & Custom Domains

Service	Cost
Elastic IP (while in use)	Free
Elastic IP (unused)	\$0.005 per hou
Route 53 domain registration	~\$12 per year

Route 53 hosted zone	~\$0.50 per month
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Can This Be Done in the Learner Lab Environment?

Creating an AMI - Yes

Restoring an AMI - Yes

Elastic IP may be restricted in AWS Educate/Learner Lab

Custom domain setup - Yes, if you use Route 53