AWS Spot Instances & Spot Fleet Practice Scenarios

Scenario 1: Launch a Spot Instance with Auto-Recovery

1. Go to AWS Console > EC2 > Spot Requests.
2. Click 'Request Spot Instances'.
3. Choose an instance type (e.g., t3.micro).
4. Set target capacity to 1.
5. Choose Amazon Linux 2023 AMI.
6. Select Spot Instance Pricing and check the current price.
7. Choose a persistent request (AWS will relaunch if terminated).
8. Click 'Launch'.
9. SSH into the instance using its public IP.
10. Check if the instance receives termination notices using metadata API.
11. Terminate the Spot Instance when done.

Estimated Cost: $0.005 - $0.01 per hour

Scenario 2: Spot Fleet with Multiple Instance Types

1. Go to AWS Console > EC2 > Spot Fleet Requests.
2. Click 'Create Spot Fleet Request'.
3. Add multiple instance types: t3.micro, t3.small.
4. Set target capacity to 2.
5. Choose an Amazon Linux 2023 AMI.
6. Set max price to on-demand price.
7. Choose Maintain target capacity.
8. Click 'Launch'.
9. Verify launched instances in EC2 Instances.
10. Manually terminate one instance and check if AWS replaces it.
11. Cancel the Spot Fleet request when done.

Estimated Cost: $0.01 - $0.02 per hour

Scenario 3: Spot Auto Scaling with a Load Balancer

1. Create an Application Load Balancer in AWS Console > EC2 > Load Balancers.
2. Name it 'spot-load-balancer', set to Internet-facing.
3. Create a new target group for HTTP traffic.
4. Create an Auto Scaling Group (ASG) in EC2 > Auto Scaling Groups.
5. Select Launch Template > Create new template.
6. Use Amazon Linux AMI and Spot Instances as the purchasing option.
7. Add instance types: t3.micro, t3.small.
8. Set Min size: 1, Max size: 2.
9. Attach Auto Scaling Group to Load Balancer target group.
10. Deploy and monitor scaling behavior.
11. Delete Auto Scaling Group and Load Balancer when done.

Estimated Cost: $0.01 - $0.02 per hour

Scenario 4: Spot Instance with EBS for Persistent Storage

1. Launch a Spot Instance.
2. Create an EBS Volume (10GB, gp3).
3. Attach the volume to the Spot Instance.
4. SSH into the instance and mount the EBS volume.
5. Create a test file on the EBS volume.
6. Detach the volume before terminating the Spot Instance.
7. Launch a new Spot Instance.
8. Reattach the existing EBS volume.
9. Mount and verify stored data persists.
10. Delete the EBS volume and terminate instances.

Estimated Cost: $0.005 - $0.01 per hour + $0.80/month for EBS

Scenario 5: Run a Batch Job with Spot Instances

1. Go to AWS Console > AWS Batch.
2. Create a Compute Environment and select Spot Instances.
3. Create a Job Queue and attach the Compute Environment.
4. Create a Job Definition using an Amazon Linux container.
5. Define the command to be executed in the batch job.
6. Submit the job and monitor its execution.
7. Delete Job Definition, Job Queue, and Compute Environment.

Estimated Cost: $0.001 - $0.005 per job

Scenario 6: Persistent Spot Instances for a Stateful Application

1. Launch a Spot Instance.
2. Create and attach an EBS Volume.
3. Install a small database like SQLite.
4. Insert and verify sample data in the database.
5. Detach the volume before terminating the instance.
6. Attach the volume to a new Spot Instance.
7. Re-mount and check data persistence.
8. Delete the volume and terminate instances.

Estimated Cost: $0.005 - $0.01 per hour + $0.80/month for EBS

Scenario 7: Spot Instances with AWS Lambda for Auto-Processing

1. Create an S3 bucket and enable event notifications.
2. Create a Lambda function to trigger Spot Instance requests.
3. Configure the Lambda function with Boto3 for EC2.
4. Upload a file to S3 to trigger the function.
5. Verify that a Spot Instance is requested.

6. Delete the Lambda function and S3 bucket.

Estimated Cost: Free (AWS Free Tier)

Scenario 8: Machine Learning Training on Spot Instances

1. Request a Spot Instance with a GPU.
2. Choose an Amazon Deep Learning AMI.
3. Install TensorFlow and train a basic ML model.
4. Save the trained model to EBS or S3.
5. Detach the volume before terminating the instance.
6. Attach the volume to a new Spot Instance and verify persistence.

Estimated Cost: $0.20 - $0.40 per hour

Scenario 9: Spot Instance for CI/CD Pipeline

1. Launch a Spot Instance.
2. Install Jenkins or GitLab Runner.
3. Configure the Spot Instance as a CI/CD runner.
4. Trigger a build job and monitor execution.
5. Delete the Spot Instance when done.

Estimated Cost: $0.005 - $0.02 per hour

Scenario 10: Data Processing Pipeline with Spot Instances

1. Create an S3 bucket for input data.
2. Launch a Spot Instance to process data.
3. Install and run a data processing script (e.g., Apache Spark).
4. Save processed data to an S3 bucket.
5. Terminate the Spot Instance when processing is complete.

Estimated Cost: $0.01 - $0.03 per hour