FinOps CI/CD cost reduction project.

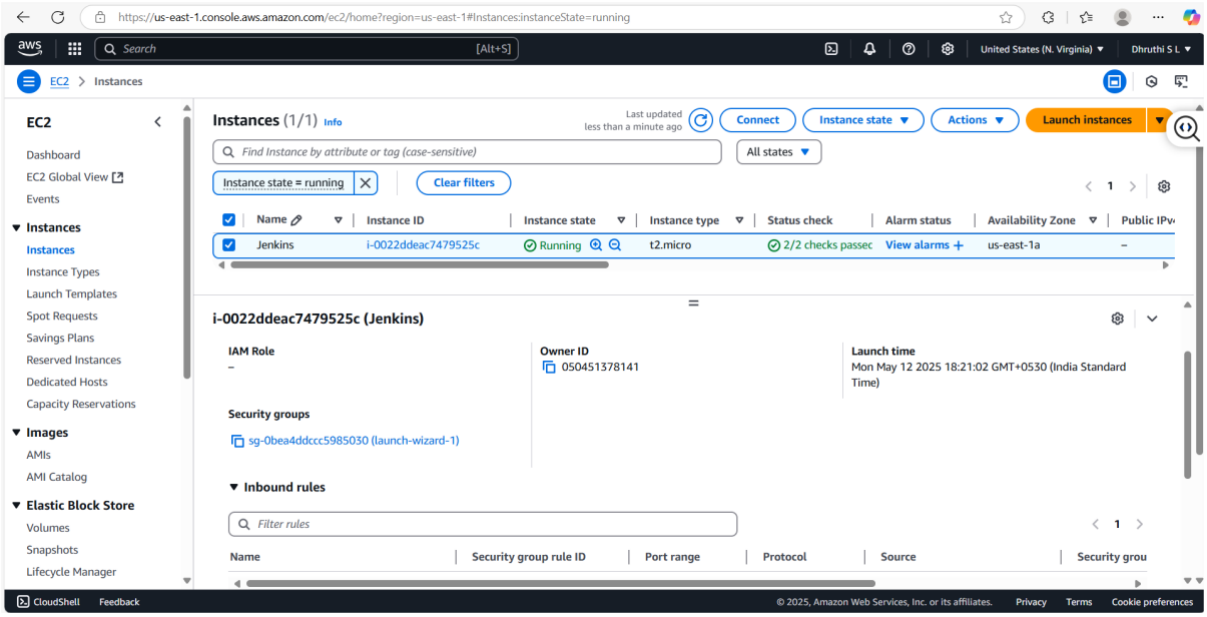
Problem statement: A company with good observability setup with ELK stack, where Logstash is used for log analysis, application logs are used to save in log files along with it the Jenkins log files are also saved, but if the build fails it would be notified through the mails and slack hence there is no requirement to save the log files of Jenkins for error analysis, it will be saved only for the safety purposes, hence it would lead to lot of cost.

Solution: Storing the log files in S3 bucket of AWS which is much cheaper, where after 3 months if the files were not used it would be pushed to S3 Glacier where very low cost is imposed and if not required it would be deleted.

Requirements:

1. AWS EC2 instance upon where Jenkins is installed.
2. S3 bucket to store the log files.
3. AWS CLI is used to connect Jenkins along with S3 bucket.

Step1: Create an EC2 instance



sudo apt update

sudo apt install openjdk-17-jre

Allow the inbound traffic by altering the inbound traffic rules.

Step 2:

Run the below commands to install Java and Jenkins

Install Java

```
sudo apt update
sudo apt install openjdk-17-jre
```

Verify Java is Installed

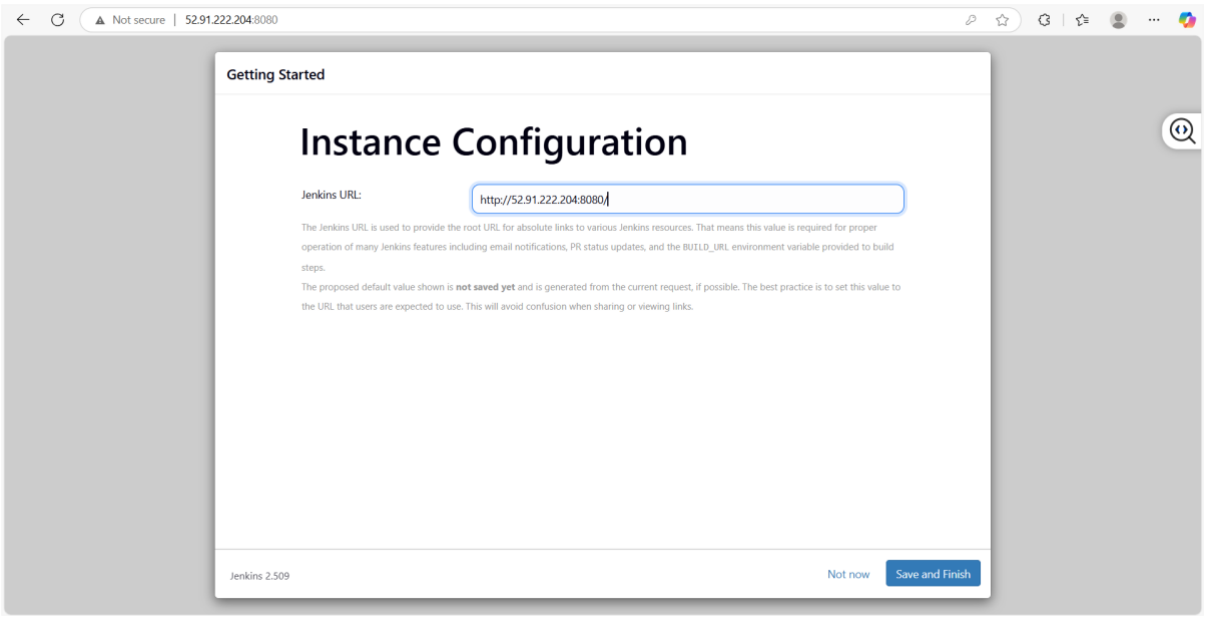
java -version

Now, you can proceed with installing Jenkins

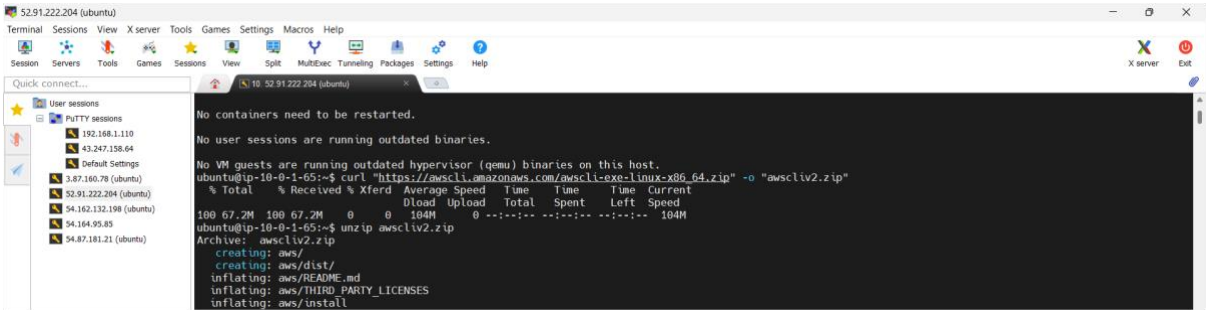
```
curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee \
  /usr/share/keyrings/jenkins-keyring.asc > /dev/null
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.jenkins.io/debian binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get install jenkins
```

After you login to Jenkins, - Run the command to copy the Jenkins Admin Password

```
sudo cat /var/lib/jenkins/secrets/initialAdminPassword - Enter the Administrator password
```

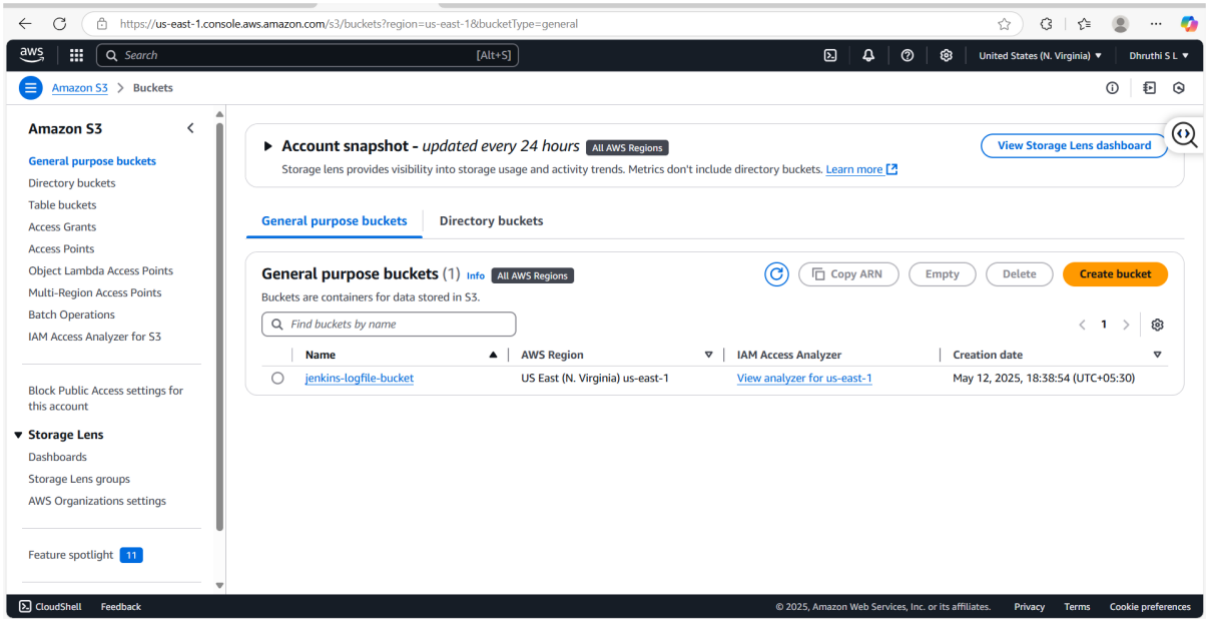


Step 3: Setting up AWS CLI




```
You can now run: /usr/local/bin/aws --version
ubuntu@ip-10-0-1-65:~$ aws --version
aws-cli/2.27.12 Python/3.13.3 Linux/6.8.0-1024-aws exe/x86_64.ubuntu.24
```

Step 4: Create S3 bucket.



Step 5: Using AWS CLI write the shell scripting file for the function to carry out.

```
#!/bin/bash

#Author: Dhruthi S L
#Description: uploading jenkins  log files to s3 bucket
# Variables
JENKINS_HOME="/var/lib/jenkins"  # Replace with your Jenkins home directory
S3_BUCKET="s3://jenkins-logfile-bucket"  # Replace with your S3 bucket name
DATE=$(date +%Y-%m-%d)  # Today's date

# Check if AWS CLI is installed
if ! command -v aws &> /dev/null; then
    echo "AWS CLI is not installed. Please install it to proceed."
    exit 1
```

```
fi

# Iterate through all job directories
for job_dir in "$JENKINS_HOME/jobs/"*/; do
   job_name=$(basename "$job_dir")

   # Iterate through build directories for the job
   for build_dir in "$job_dir/builds/"*/; do
      # Get build number and log file path
      build_number=$(basename "$build_dir")
      log_file="$build_dir/log"

      # Check if log file exists and was created today
      if [ -f "$log_file" ] && [ "$(date -r "$log_file" +%Y-%m-%d)" == "$DATE" ]; then
         # Upload log file to S3 with the build number as the filename
         aws s3 cp "$log_file" "$S3_BUCKET/$job_name-$build_number.log" --only-show-errors

         if [ $? -eq 0 ]; then
            echo "Uploaded: $job_name/$build_number to $S3_BUCKET/$job_name-
$build_number.log"
         else
            echo "Failed to upload: $job_name/$build_number"
         fi
      fi
   done
done
```

 Purpose: Automates uploading of Jenkins build log files to an S3 bucket using AWS CLI.

 Variable Setup:

- Sets JENKINS_HOME as the Jenkins directory.
- Defines S3_BUCKET for the target S3 path.
- Uses date +%Y-%m-%d to get the current date for filtering logs.

 AWS CLI Check:

- Uses command -v aws to ensure AWS CLI is installed before proceeding.

 Directory Iteration:

- Loops through all job directories in Jenkins.
- For each job, loops through its build directories.

 Log File Filtering:

- Checks if a log file exists using -f.
- Confirms it was modified today using date -r.

 S3 Upload:

- Uses aws s3 cp to upload the log file.
- Renames the file as <job_name>-<build_number>.log.
- Adds --only-show-errors to suppress standard AWS CLI output.

Upload Verification:

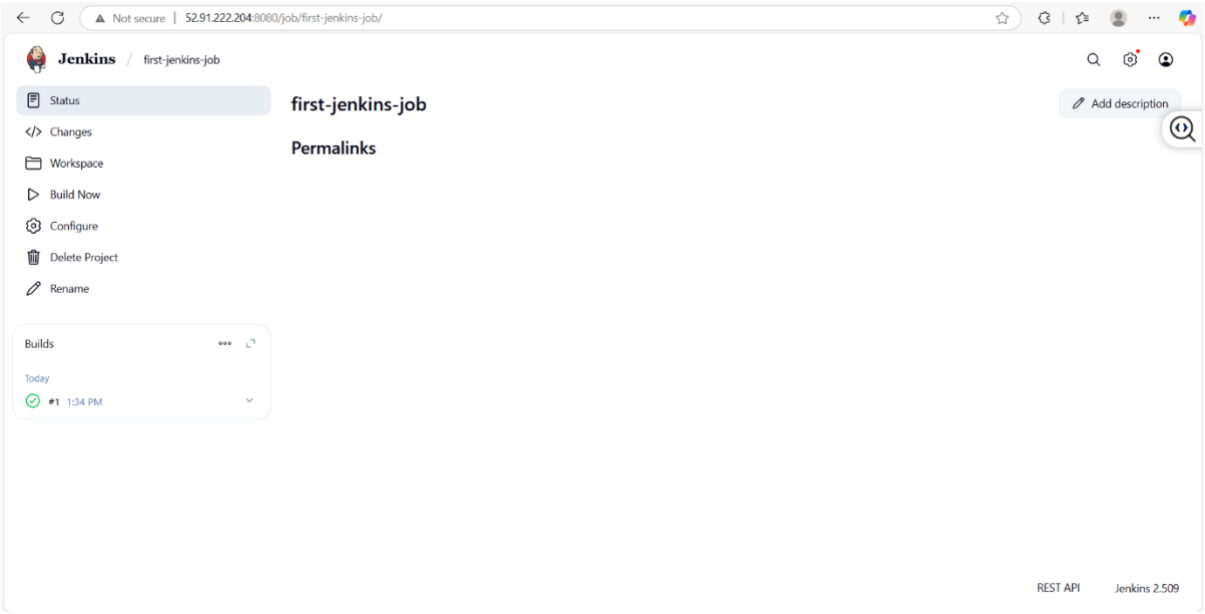
- Checks return code with $? to verify success.
- Prints success or failure messages accordingly.

Concepts Demonstrated:

- Shell scripting fundamentals: variables, loops, conditionals.
- Command substitution and use of system utilities.
- Practical integration with AWS CLI for cloud automation.

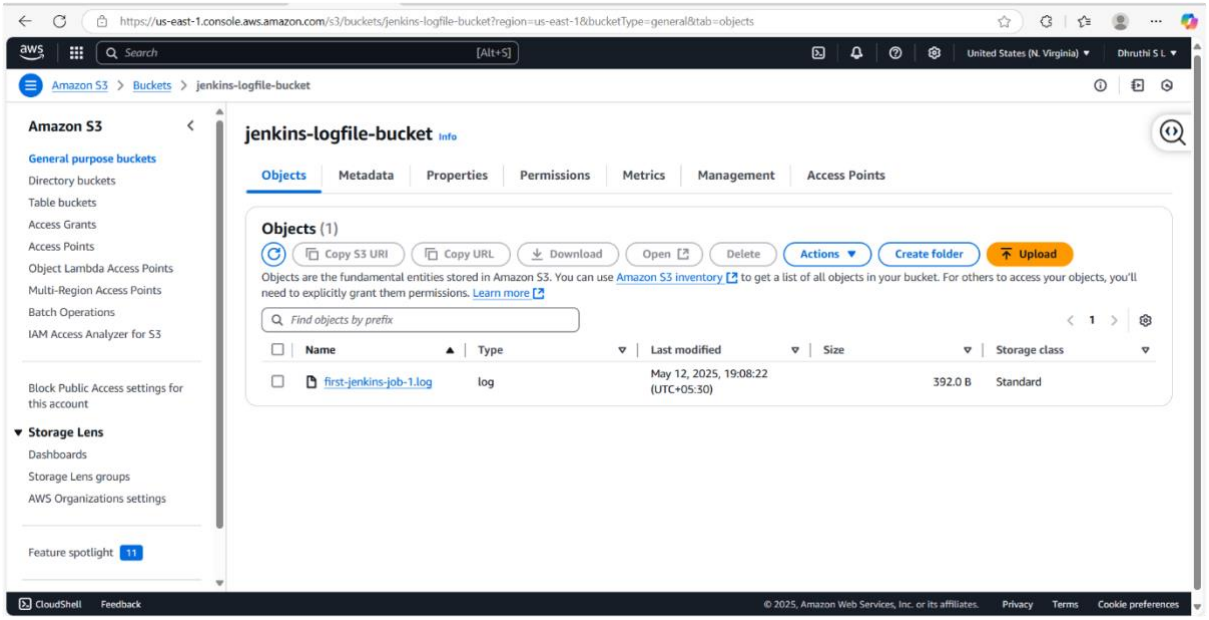
Step 6:

Create your job and build it in Jenkins.



Step 7: Execute the script and Jenkins log files will be uploaded to AWS S3 bucket.

```
ubuntu@ip-10-0-1-65:~$ aws configure
AWS Access Key ID [****************GONL]:
AWS Secret Access Key [****************6fA+]:
Default region name [us-east-1]:
Default output format [json]:
ubuntu@ip-10-0-1-65:~$ ^C
ubuntu@ip-10-0-1-65:~$ chmod +x s3upload.sh
ubuntu@ip-10-0-1-65:~$ ./s3upload.sh
Uploaded: first-jenkins-job/1 to s3://jenkins-logfile-bucket/first-jenkins-job-1.log
```



Conclusion: This **reduces** the cost by **50%,** rather than storing all the log files of Jenkins in ELK which would be very costly.