**Automated CI/CD Pipeline Deployment Using Jenkins on AWS**

Your summary of the Jenkins deployment process on AWS is clear and well-structured. Here’s an organized, simplified version with a bit more emphasis on key action points:

**Jenkins on AWS Deployment Guide**

**Table of Contents**

1. Overview
2. Prerequisites
3. Creating a Key Pair
4. Creating a Security Group
5. Launching an Amazon EC2 Instance
6. Installing and Configuring Jenkins
7. Cleanup

**Overview**

Jenkins is an open-source automation server that supports CI/CD. This guide will walk you through deploying Jenkins on an EC2 instance, configuring it, and connecting it to AWS services for scaling and integration.

**1. Prerequisites**

* **AWS Account**: Register if you don’t have one.
* **IAM User**: Ensure programmatic access and EC2 permissions.
* **EC2 Key Pair**: Necessary for secure SSH access to the instance.

**2. Creating a Key Pair**

1. Go to **EC2 Console > Key Pairs > Create Key Pair**.
2. Name the key, select PEM format (for OpenSSH), and save it securely.
3. On macOS/Linux, set permissions with: chmod 400 <key\_pair\_name>. pem.

**3. Creating a Security Group**

1. Go to **EC2 Console > Security Groups > Create Security Group**.
2. Name the group (e.g., WebServerSG), set the VPC, and add the following rules:
   * **SSH (Port 22)**: For your IP only.
   * **HTTP (Port 80)**: Open to all (0.0.0.0/0).
   * **Custom TCP (Port 8080)**: Open for Jenkins.

**4. Launching an Amazon EC2 Instance**

1. Go to **EC2 Console > Launch Instance**.
2. Select an **Amazon Linux AMI** (HVM, free-tier eligible).
3. Attach your key pair and select the security group created above.
4. Launch the instance, then check its status to ensure it’s running.

**5. Installing and Configuring Jenkins**

**Connecting to the Linux Instance**

* **Get Public DNS**: From instance details.
* **Connect**:
  + Windows: Use PuTTY, adding the DNS and key file.
  + Linux/macOS: ssh -i /path/to/key.pem ec2-user@<public\_dns>.

**Downloading & Installing Jenkins**

1. **Update packages**: sudo yum update -y.
2. **Add Jenkins repository and import key**:

sudo wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo

sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key

1. **Install Java**: sudo yum install java-17-amazon-corretto -y.
2. **Install Jenkins**: sudo yum install jenkins -y.
3. **Enable and start Jenkins**:

sudo systemctl enable jenkins

sudo systemctl start jenkins

**Configuring Jenkins**

1. **Access Jenkins**: Go to http://<your\_server\_public\_DNS>:8080.
2. **Unlock Jenkins**: Retrieve the password from /var/lib/jenkins/secrets/initialAdminPassword.
3. **Complete Setup**: Install suggested plugins and create an admin user.
4. **Install Amazon EC2 Plugin**: Go to **Manage Plugins** and install it.
5. **Configure Amazon EC2 Plugin**:
   * **Manage Jenkins > Configure Nodes and Clouds**.
   * Add Amazon EC2 cloud, input IAM credentials, region, and key pair, then test the connection.

**6. Cleanup**

* **Delete EC2 Instance**: Terminate the instance to avoid charges once you're done.