# Tutorial: Create a four-stage pipeline

#### **Topics**

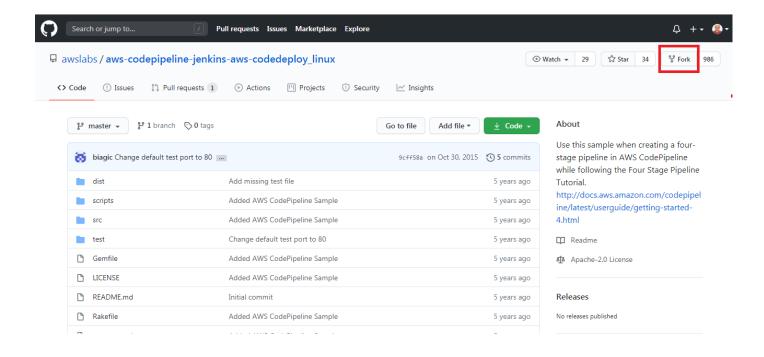
- Step 1: Complete prerequisites
- Step 2: Create a pipeline in CodePipeline
- Step 3: Add another stage to your pipeline
- Step 4: Clean up resources

# Step 1: Complete prerequisites

## Copy or clone the sample into a GitHub repository

To clone the sample and push to a GitHub repository

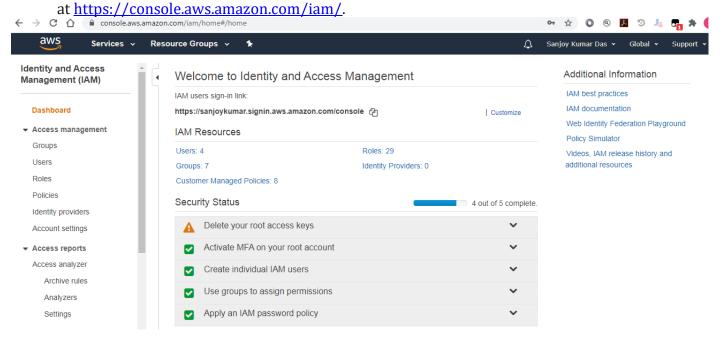
- 1. Download the sample code from the GitHub repository, or clone the repositories to your local computer. There are two sample packages:
  - ➤ If you will be deploying your sample to Amazon Linux, RHEL, or Ubuntu Server instances, choose <u>aws-codepipeline-jenkins-aws-codedeploy linux.zip</u>.
  - ➤ If you will be deploying your sample to Windows Server instances, choose <u>AWSCodePipeline-Jenkins-AWSCodeDeploy Windows.zip.</u>
- 2. From the repository, choose **Fork** to clone the sample repo into a repo in my Github account.



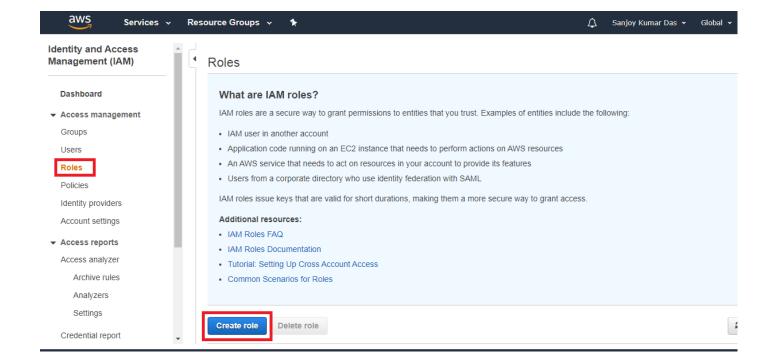
## Create an IAM role to use for Jenkins integration

As a best practice, consider launching an EC2 instance to host your Jenkins server and using an IAM role to grant the instance the required permissions for interacting with CodePipeline.

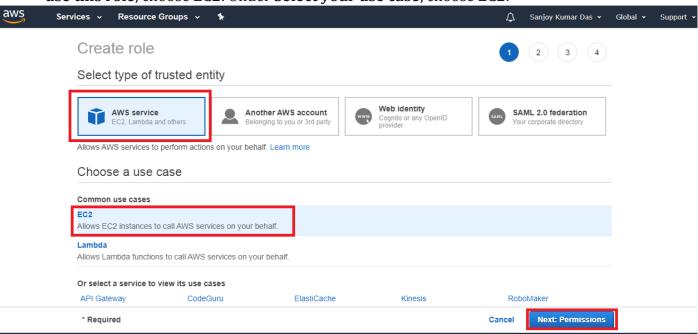
1. Sign in to the AWS Management Console and open the IAM console



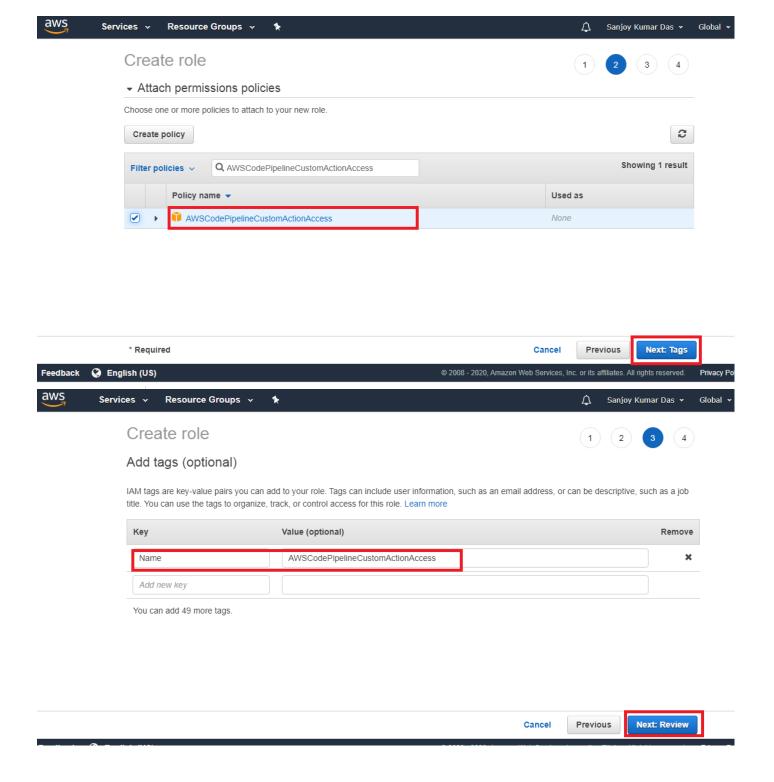
2. In the IAM console, in the navigation pane, choose **Roles**, and then choose **Create role**.



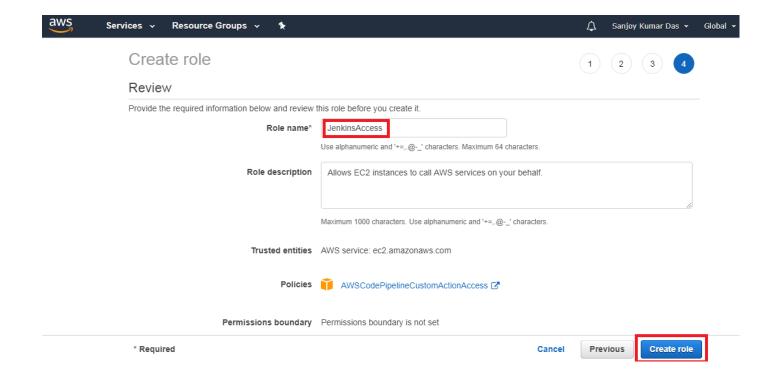
3. Under Select type of trusted entity, choose AWS service. Under Choose the service that will use this role, choose EC2. Under Select your use case, choose EC2.



4. Choose **Next: Permissions**. On the **Attach permissions policies** page, select the AWSCodePipelineCustomActionAccess managed policy, and then choose **Next: Tags**. Choose **Next: Review**.



5. On the **Review** page, in **Role name**, enter the name of the role to create specifically for Jenkins integration (for example, *JenkinsAccess*), and then choose **Create role**.

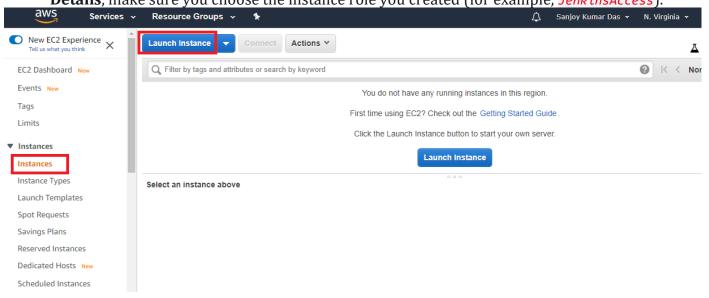


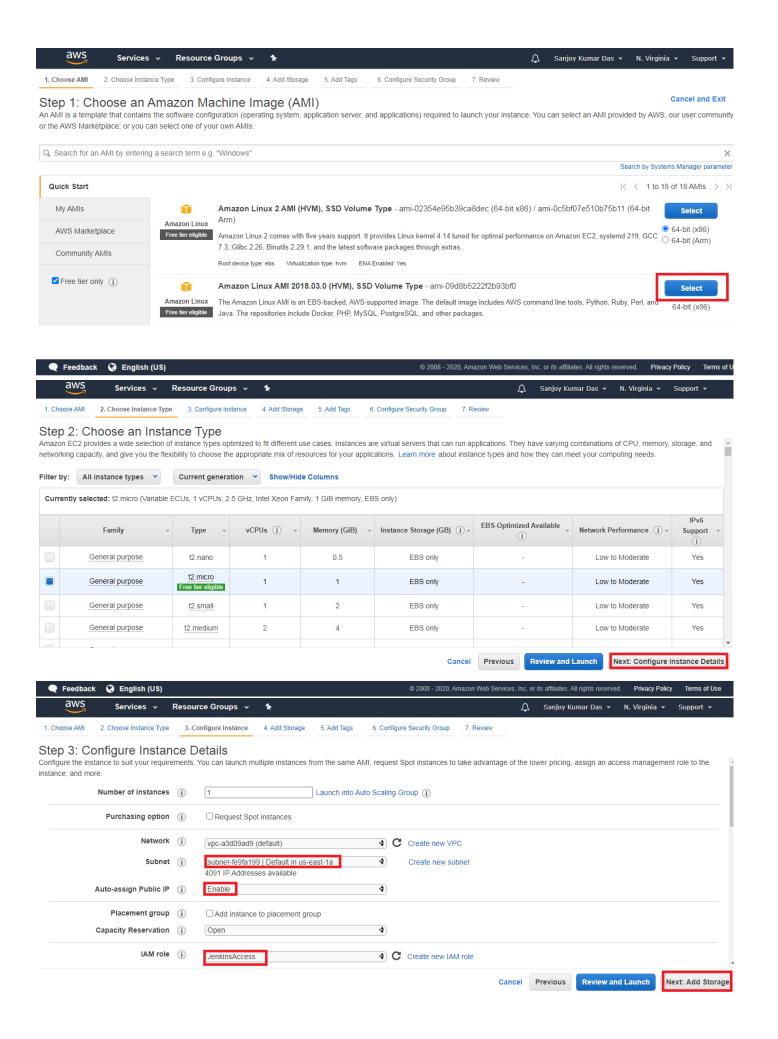
When you create the EC2 instance where you will install Jenkins, in **Step 3: Configure Instance Details**, make sure you choose the instance role (for example, **JenkinsAccess**).

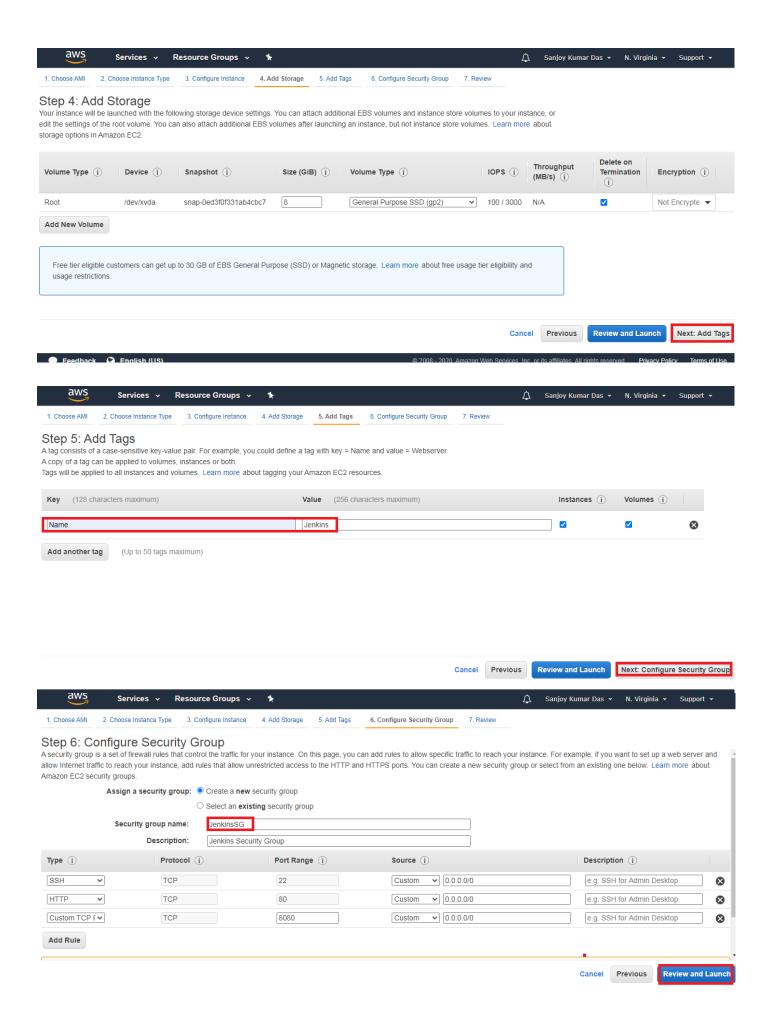
# Install and configure Jenkins and the CodePipeline Plugin for Jenkins

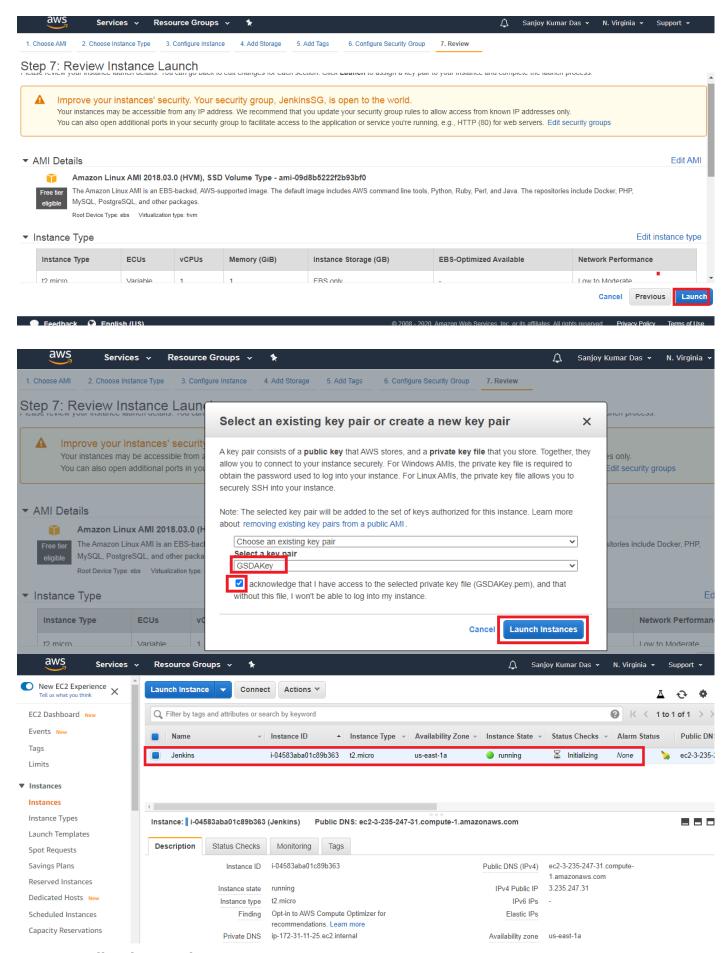
#### To install Jenkins and the CodePipeline Plugin for Jenkins

1. Create an EC2 instance where you will install Jenkins, and in **Step 3: Configure Instance Details**, make sure you choose the instance role you created (for example, *JenkinsAccess*).









2. Install Jenkins on the EC2 instance.

# wget -0 /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo

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

#yum upgrade

# yum install jenkins java-1.8.0-openjdk-devel

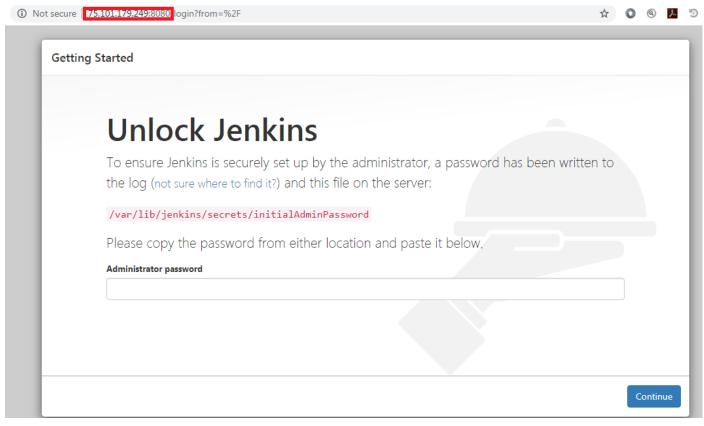
Start Jenkins: You can start the Jenkins service with the command:

# sudo service jenkins start

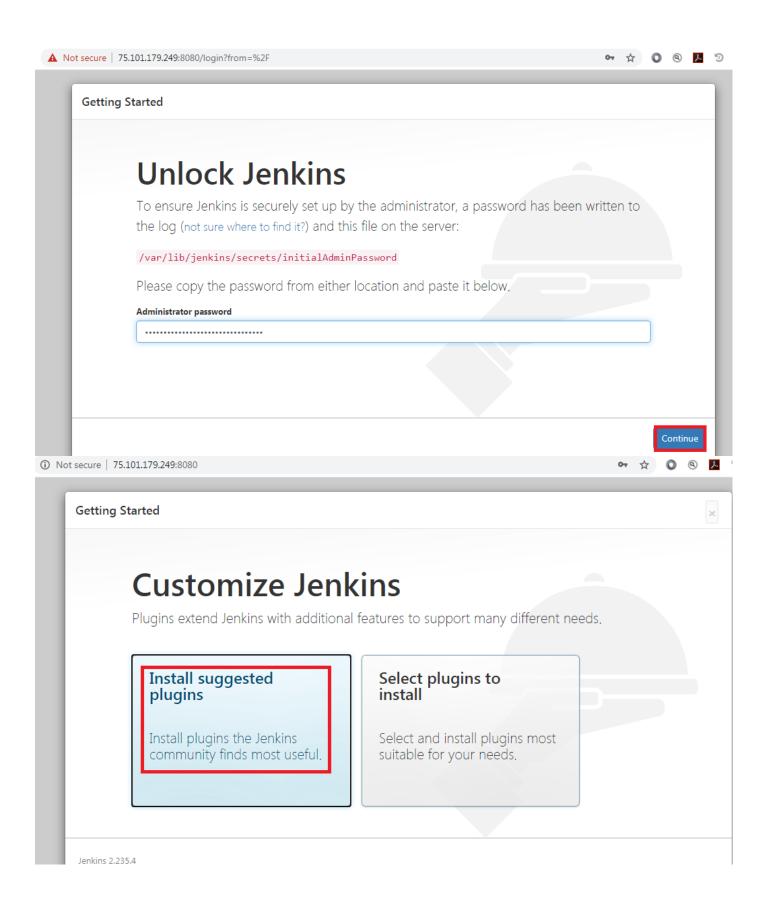
You can check the status of the Jenkins service using the command:

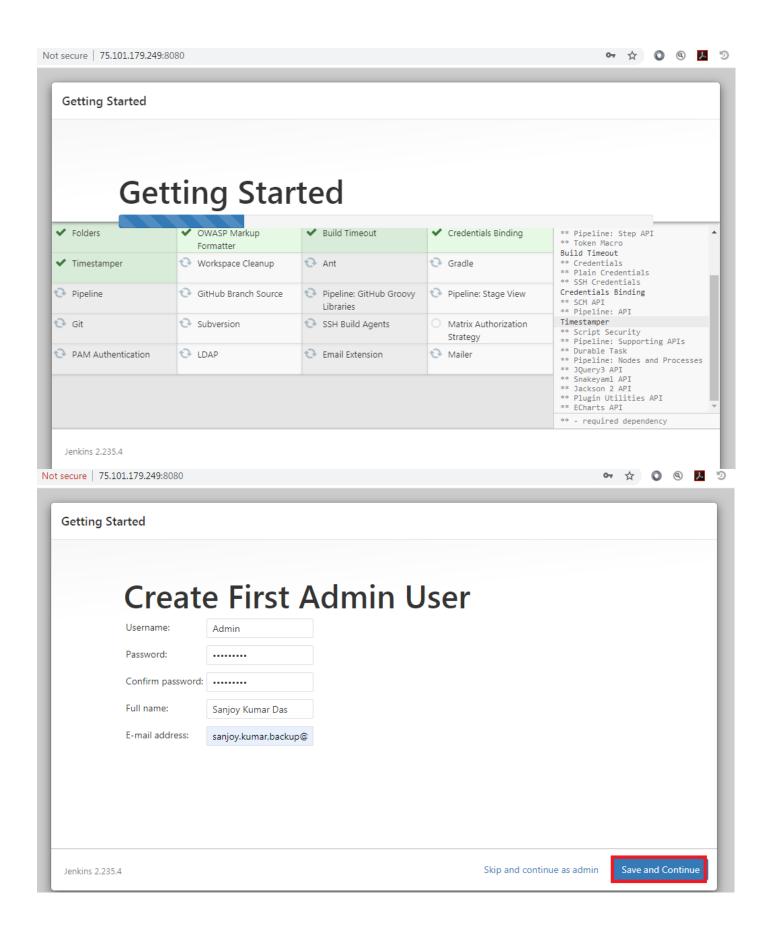
# sudo service jenkins status

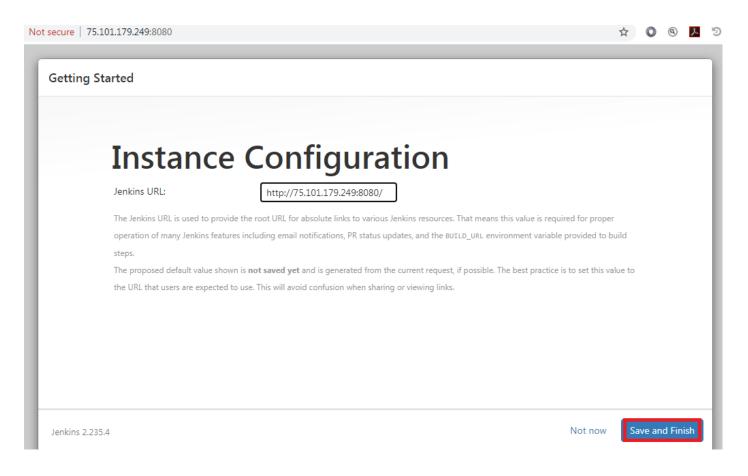
3. Launch Jenkins, and on the home page, choose **Manage Jenkins**.



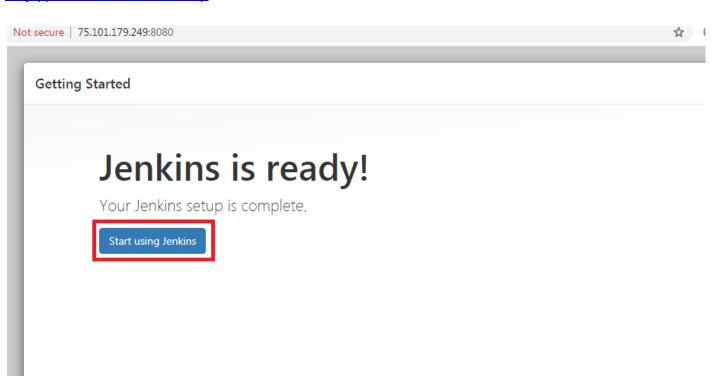
[root@ip-172-31-13-175 ~]# cat /var/lib/jenkins/secrets/initialAdminPassword

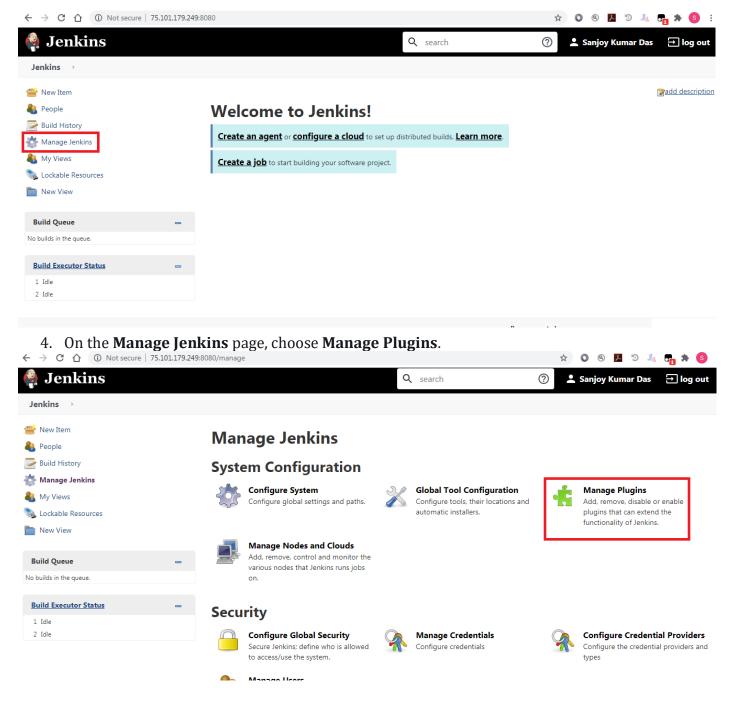




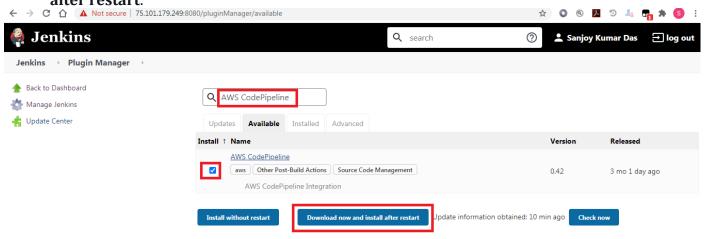


#### http://75.101.179.249:8080/





Choose the **Available** tab, and in the **Filter** search box, enter **AWS** CodePipeline.
 Choose **CodePipeline Plugin for Jenkins** from the list and choose **Download now and install** after restart.



6. On the Installing Plugins/Upgrades page, select Restart Jenkins when installation is complete and no jobs are running.

① Not secure | 75.101.179.249:8080/updateCenter/







### Please wait while Jenkins is restarting ...

Your browser will reload automatically when Jenkins is ready.

#### 7. Choose Back to Dashboard.

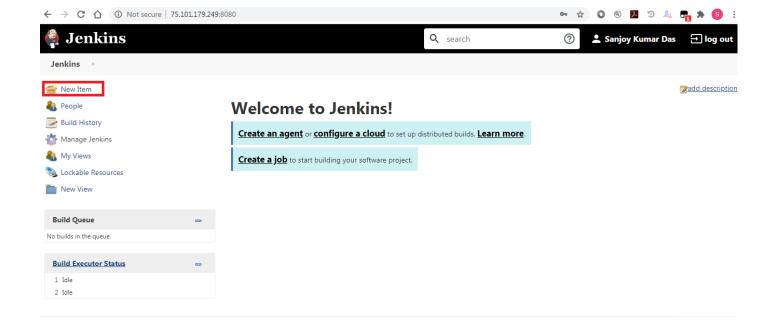
75.101.179.249:8080/login?from=%2F



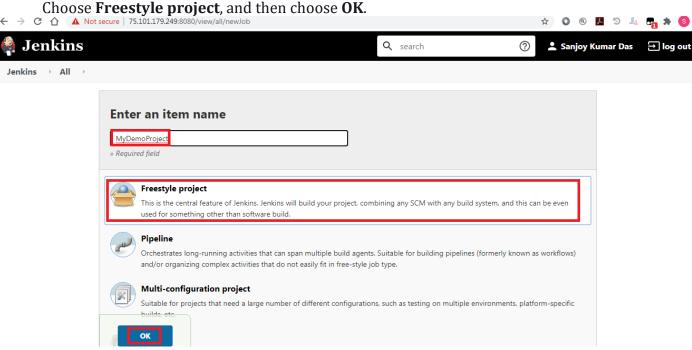
## Welcome to Jenkins!

Admin		
	Sign in	
Keep me signed in		

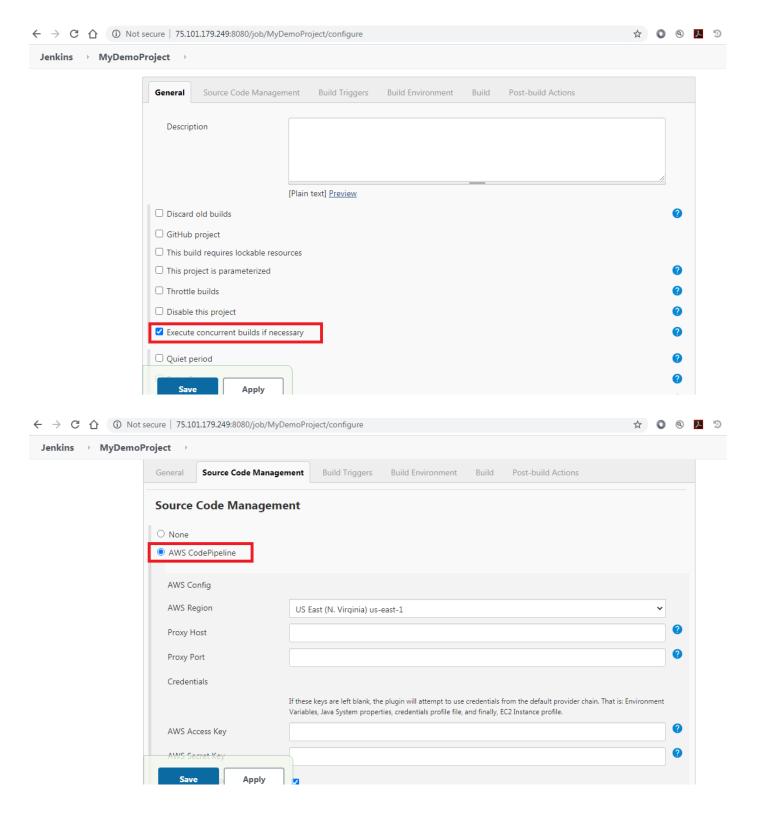
8. On the main page, choose **New Item**.



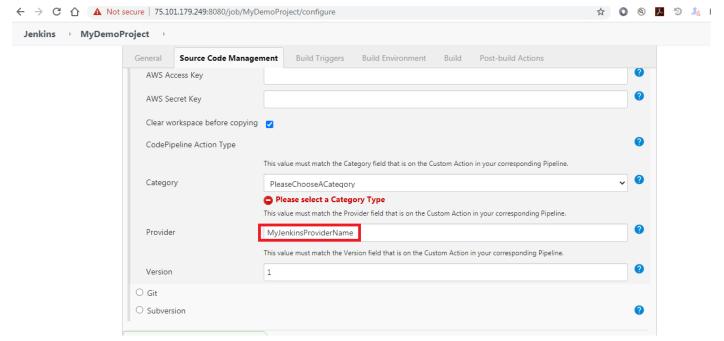
9. In **Item Name**, enter a name for the Jenkins project (for example, MyDemoProject).



10. On the configuration page for the project, select the **Execute concurrent builds if necessary** check box. In **Source Code Management**, choose **AWS CodePipeline**. If you have installed Jenkins on an EC2 instance and configured the AWS CLI with the profile for the IAM user you created for integration between CodePipeline and Jenkins, leave all of the other fields empty.



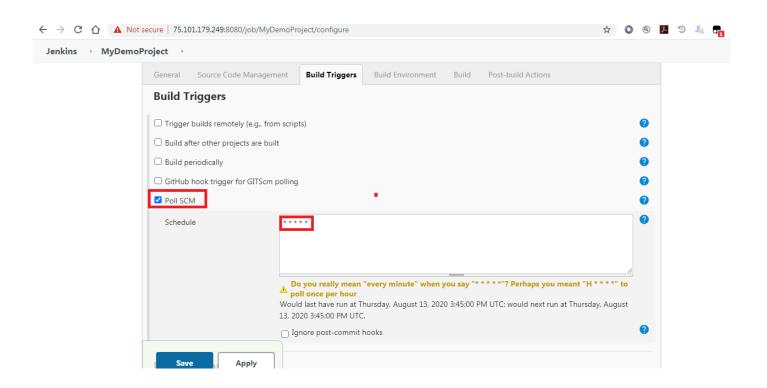
11. Choose **Advanced**, and in **Provider**, enter a name for the provider of the action as it will appear in CodePipeline (for example, *MyJenkinsProviderName*). Make sure that this name is unique and easy to remember. You will use it when you add a build action to your pipeline later in this tutorial, and again when you add a test action.



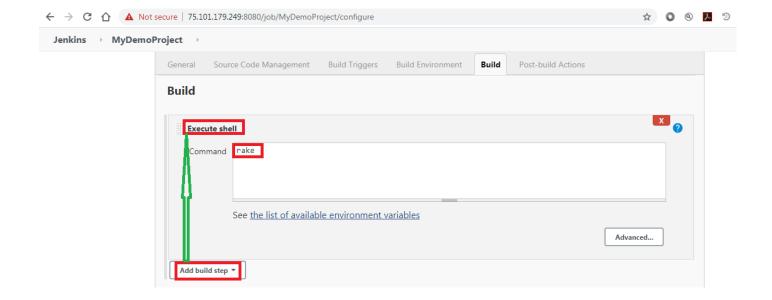
12. In **Build Triggers**, clear any check boxes, and then select **Poll SCM**. In **Schedule**, enter five asterisks separated by spaces, as follows:

\* \* \* \* \*

This polls CodePipeline every minute.

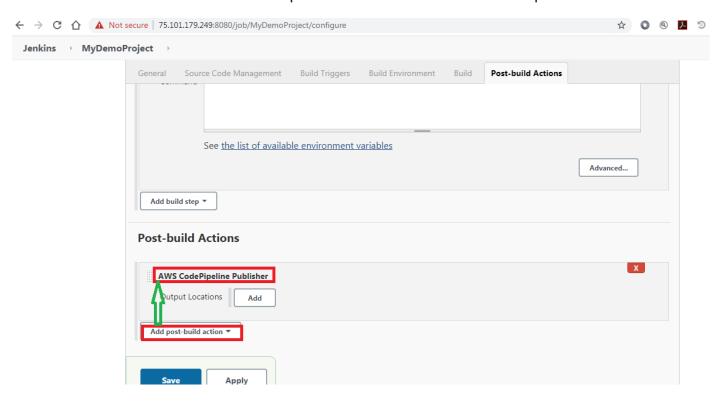


13. In **Build**, choose **Add build step**. Choose **Execute shell** (Amazon Linux, RHEL, or Ubuntu Server) **Execute batch command** (Windows Server), and then enter the following:

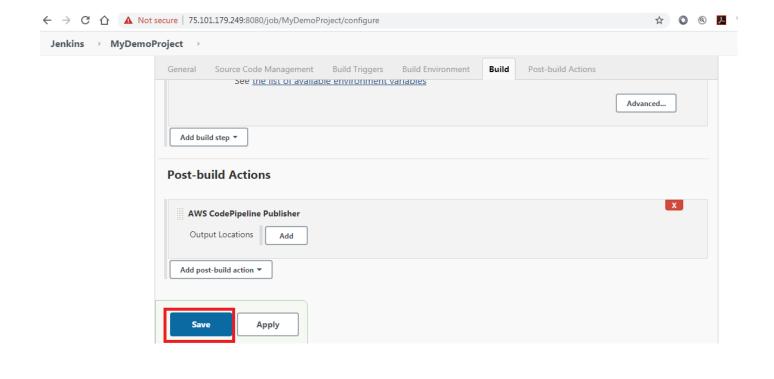


14. Choose **Add post-build action**, and then choose **AWS CodePipeline Publisher**.

Choose **Add**, and in **Build Output Locations**, leave the location blank. This configuration is the default. It will create a compressed file at the end of the build process.



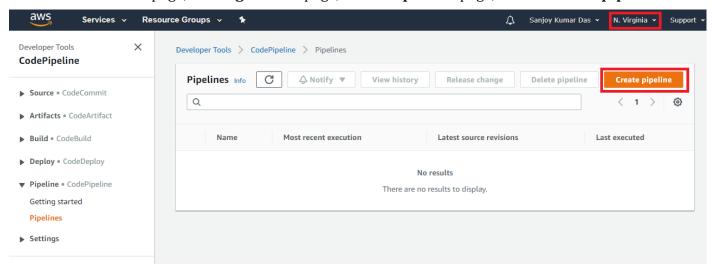
15. Choose **Save** to save your Jenkins project.



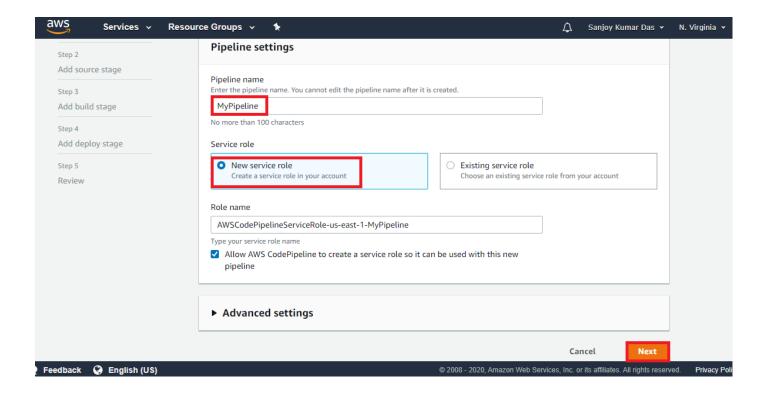
## Step 2: Create a pipeline in CodePipeline

#### To create a CodePipeline automated release process

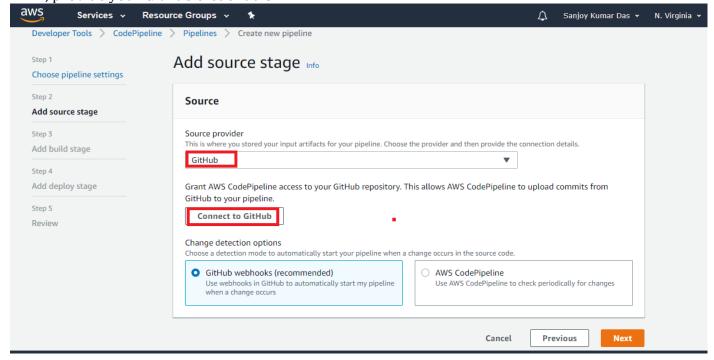
- 1. Sign in to the AWS Management Console and open the CodePipeline console at <a href="http://console.aws.amazon.com/codesuite/codepipeline/home">http://console.aws.amazon.com/codesuite/codepipeline/home</a>.
- 2. If necessary, use the Region selector to change the Region to the one where your pipeline resources are located. For example, if you created resources for the previous tutorial in us-east-1, make sure that the Region selector is set to N. Virginia.
- 3. On the **Welcome** page, **Getting started** page, or the **Pipelines** page, choose **Create pipeline**.

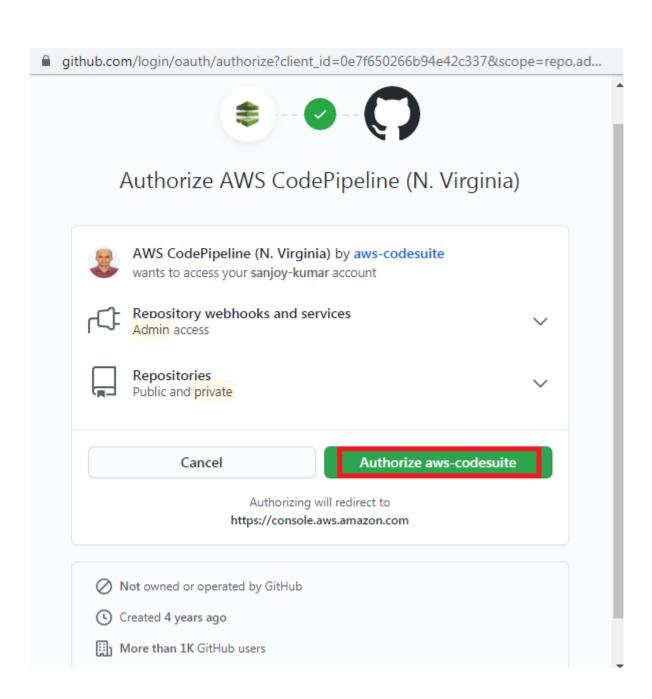


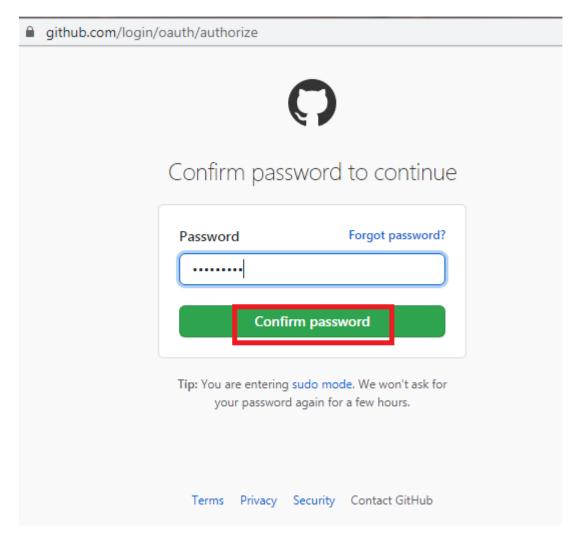
- 4. On the **Step 1: Choose pipeline settings** page, in **Pipeline name**, enter the name for your pipeline.
- 5. In **Service role**, choose **New service role** to allow CodePipeline to create a service role in IAM.
- 6. Leave the settings under **Advanced settings** at their defaults, and choose **Next**.

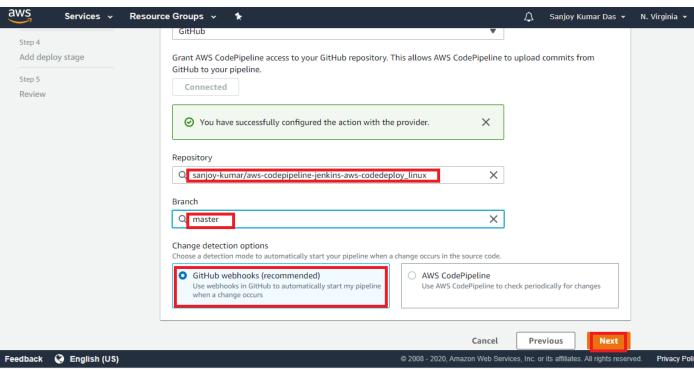


7. In **Step 2: Add source stage**, in **Source provider**, choose **GitHub**, and then choose **Connect to GitHub**. This will open a new browser window that will connect you to GitHub. If prompted to sign in, provide your GitHub credentials.



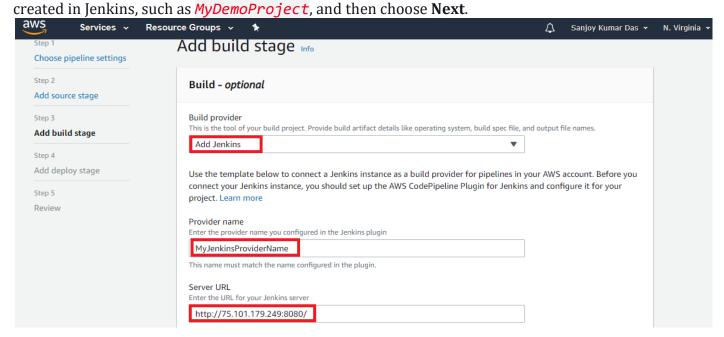


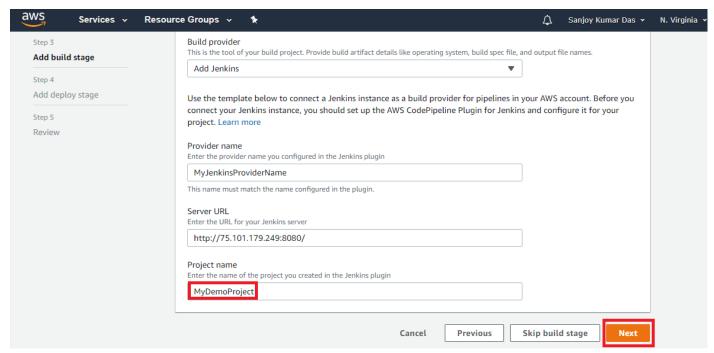




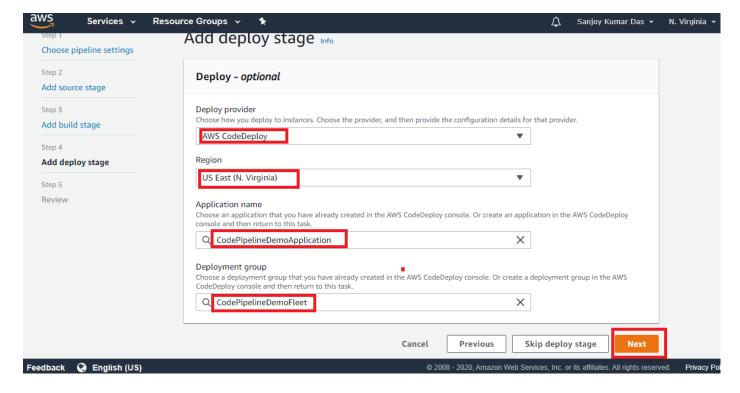
8. In **Step 3: Add build stage**, choose **Add Jenkins**. In **Provider name**, enter the name of the action you provided in the CodePipeline Plugin for Jenkins (for example *MyJenkinsProviderName*). This name must exactly match the name in the CodePipeline Plugin for Jenkins. In **Server URL**, enter the URL of

the EC2 instance where Jenkins is installed. In **Project name**, enter the name of the project you





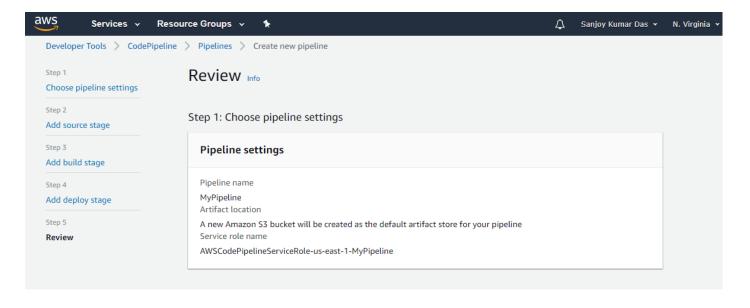
9. In Step 4: Add deploy stage, reuse the CodeDeploy application and deployment group you created in <u>Tutorial</u>: <u>Create a simple pipeline (S3 bucket)</u>. In **Deploy provider**, choose **CodeDeploy**. In **Application name**, enter **CodePipelineDemoApplication**, or choose the refresh button, and then choose the application name from the list. In **Deployment group**, enter **CodePipelineDemoFleet**, or choose it from the list, and then choose **Next**.

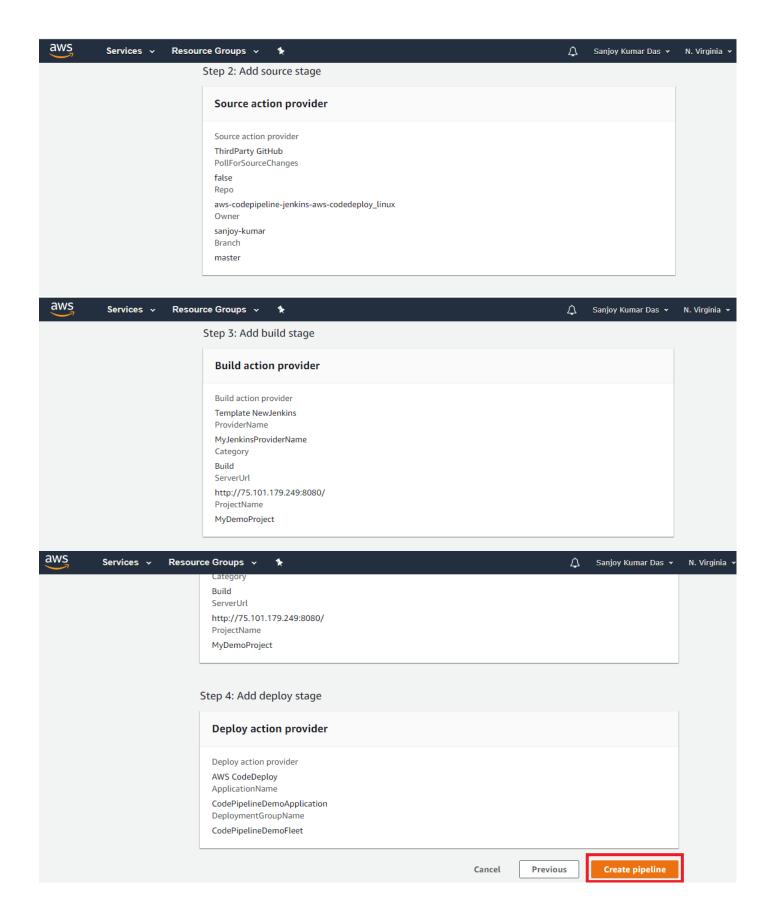


#### Note

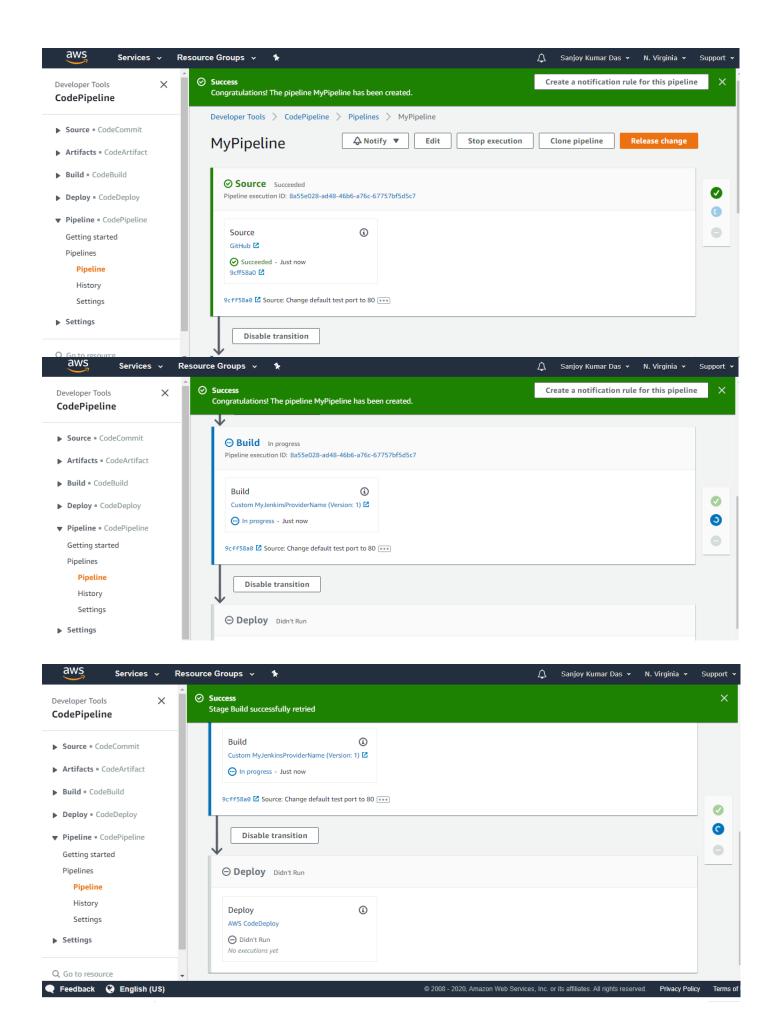
You can use your own CodeDeploy resources or create new ones, but you might incur additional costs.

10. In **Step 5: Review**, review the information, and then choose **Create pipeline**.





11. The pipeline automatically starts and runs the sample through the pipeline. You can view progress and success and failure messages as the pipeline builds the Haml sample to HTML and deploys it a webpage to each of the Amazon EC2 instances in the CodeDeploy deployment.



## Step 3: Add another stage to your pipeline

Now you will add a test stage and then a test action to that stage that uses the Jenkins test included in the sample to determine whether the webpage has any content. This test is for demonstration purposes only.

## Add a test stage to your pipeline

#### **Topics**

- Look up the IP address of an instance
- Create a Jenkins project for testing the deployment
- Create a fourth stage

## Look up the IP address of an instance

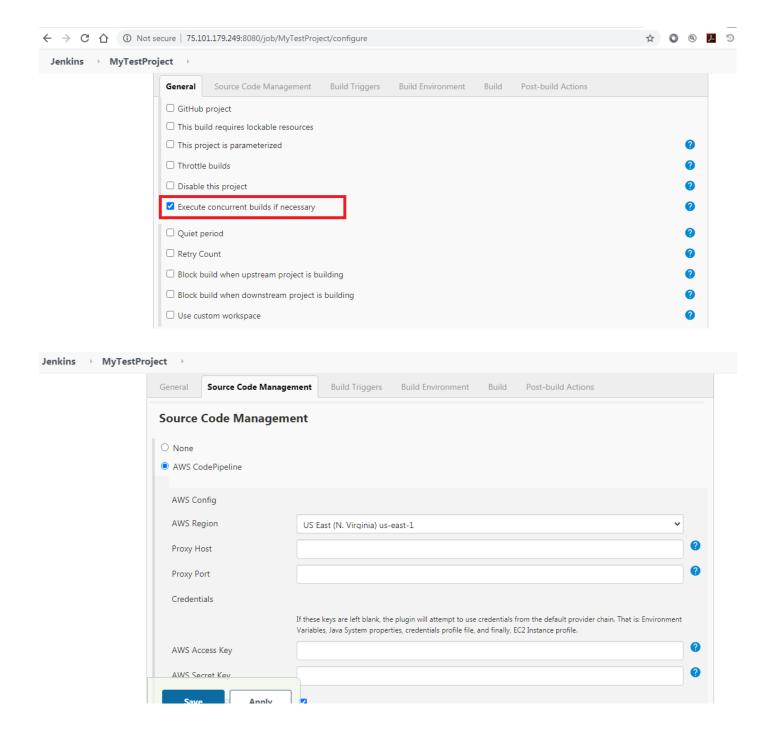
#### To verify the IP address of an instance where you deployed your code

- 1. After **Succeeded** is displayed for the pipeline status, in the status area for the Staging stage, choose **Details**.
- 2. In the **Deployment Details** section, in **Instance ID**, choose the instance ID of one of the successfully deployed instances.
- 3. Copy the IP address of the instance (for example, 172.31.13.175). You will use this IP address in your Jenkins test.

## Create a Jenkins project for testing the deployment

#### To create the Jenkins project

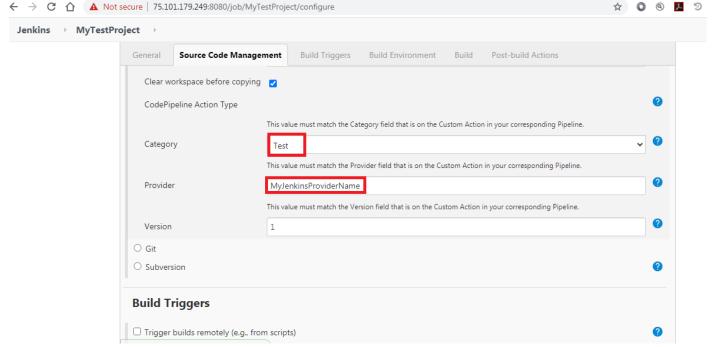
- 1. On the instance where you installed Jenkins, open Jenkins and from the main page, choose **New Item**.
- 2. In **Item Name**, enter a name for the Jenkins project (for example, *MyTestProject*). Choose **Freestyle project**, and then choose **OK**.
- 3. On the configuration page for the project, select the Execute concurrent builds if necessary check box. In Source Code Management, choose AWS CodePipeline. If you have installed Jenkins on an EC2 instance and configured the AWS CLI with the profile for the IAM user you created for integration between CodePipeline and Jenkins, leave all the other fields empty.



#### **Important**

If you are configuring a Jenkins project and it is not installed on an Amazon EC2 instance, or it is installed on an EC2 instance that is running a Windows operating system, complete the fields as required by your proxy host and port settings, and provide the credentials of the IAM user you configured for integration between Jenkins and CodePipeline.

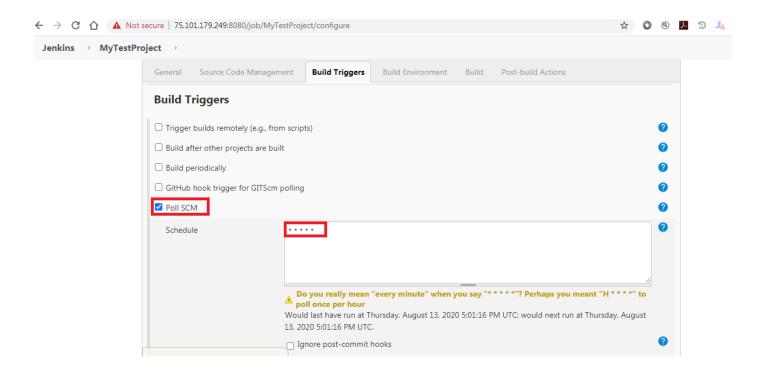
- 4. Choose **Advanced**, and in **Category**, choose **Test**.
- 5. In **Provider**, enter the same name you used for the build project (for example, *MyJenkinsProviderName*). You will use this name when you add the test action to your pipeline later in this tutorial.



6. In **Build Triggers**, clear any check boxes, and then select **Poll SCM**. In **Schedule**, enter five asterisks separated by spaces, as follows:

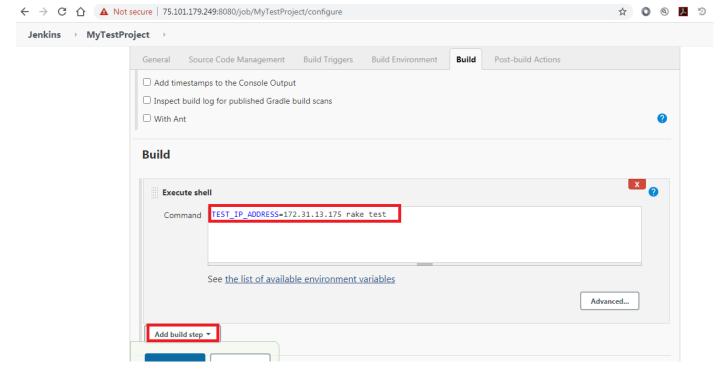
\* \* \* \* \*

This polls CodePipeline every minute.



7. In **Build**, choose **Add build step**. If you are deploying to Amazon Linux, RHEL, or Ubuntu Server instances, choose **Execute shell**. Then enter the following, where the IP address is the address of the EC2 instance you copied earlier:

TEST\_IP\_ADDRESS= 172.31.13.175 rake test



If you are deploying to Windows Server instances, choose **Execute batch command**, and then enter the following, where the IP address is the address of the EC2 instance you copied earlier:

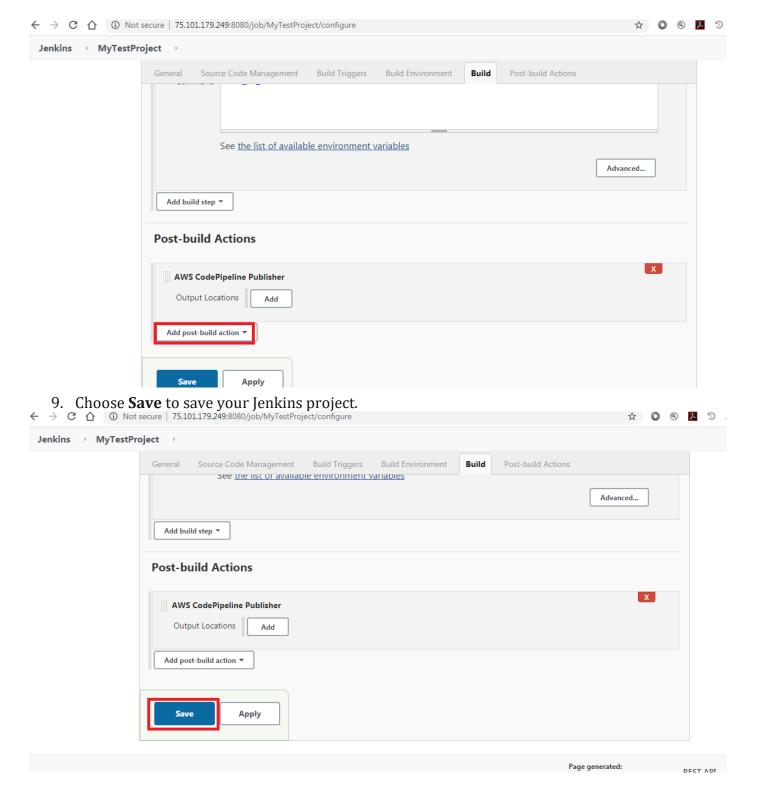
```
set TEST_IP_ADDRESS=172.31.13.175 rake test
```

#### **Note**

The test assumes a default port of 80. If you want to specify a different port, add a test port statement, as follows:

```
TEST_IP_ADDRESS= 172.31.13.175 TEST_PORT=8000 rake test
```

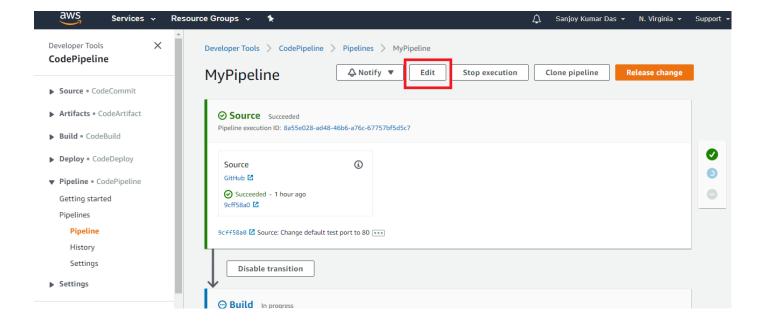
8. Choose **Add post-build action**, and then choose **AWS CodePipeline Publisher**. Do not choose **Add**.



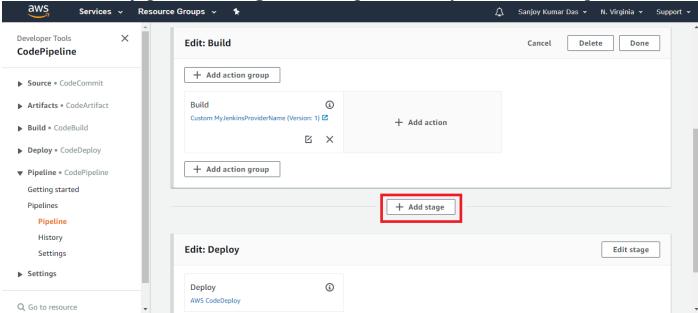
## Create a fourth stage

#### To add a stage to your pipeline that includes the Jenkins test action

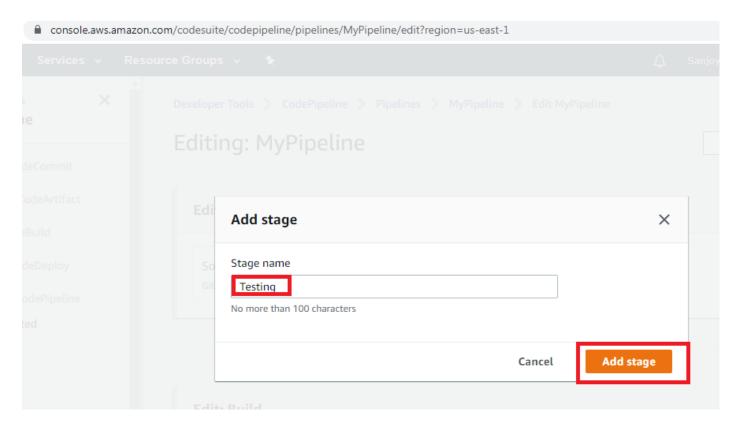
- 1. Sign in to the AWS Management Console and open the CodePipeline console at <a href="http://console.aws.amazon.com/codesuite/codepipeline/home">http://console.aws.amazon.com/codesuite/codepipeline/home</a>.
- 2. In **Name**, choose the name of the pipeline you created, MyPipeline.
- 3. On the pipeline details page, choose **Edit**.

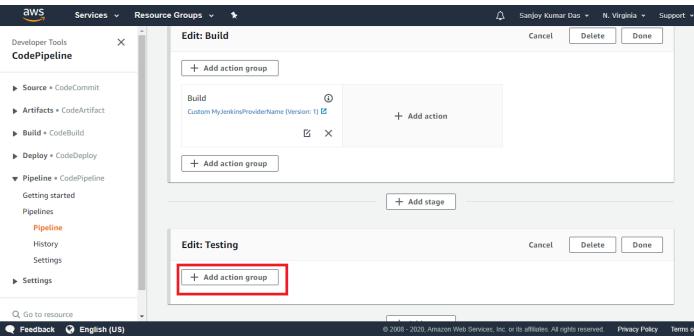


4. On the **Edit** page, choose + **Stage** to add a stage immediately after the Build stage.

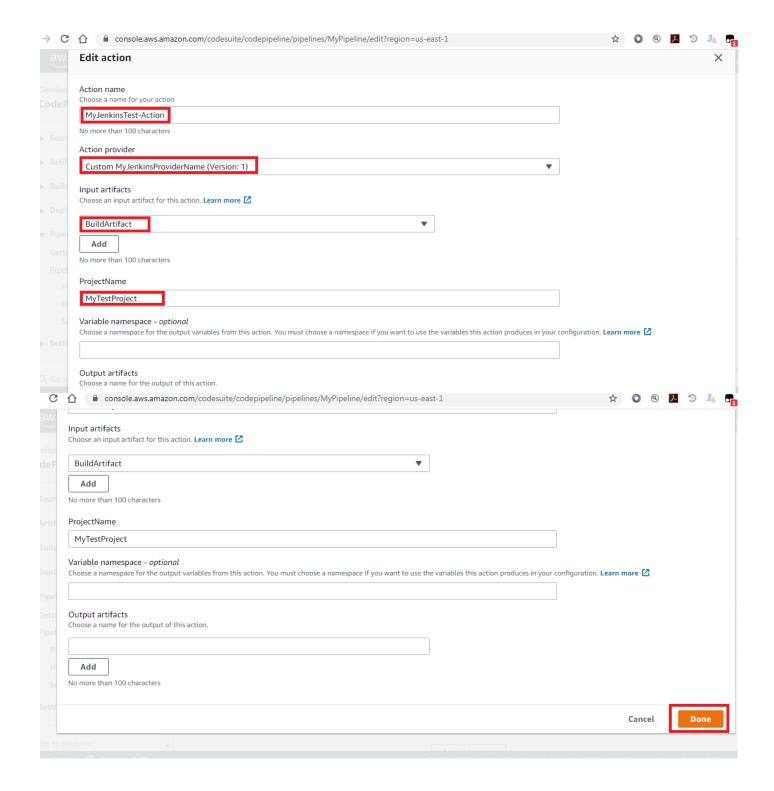


5. In the name field for the new stage, enter a name (for example, **Testing**), and then choose **+ Add action group**.

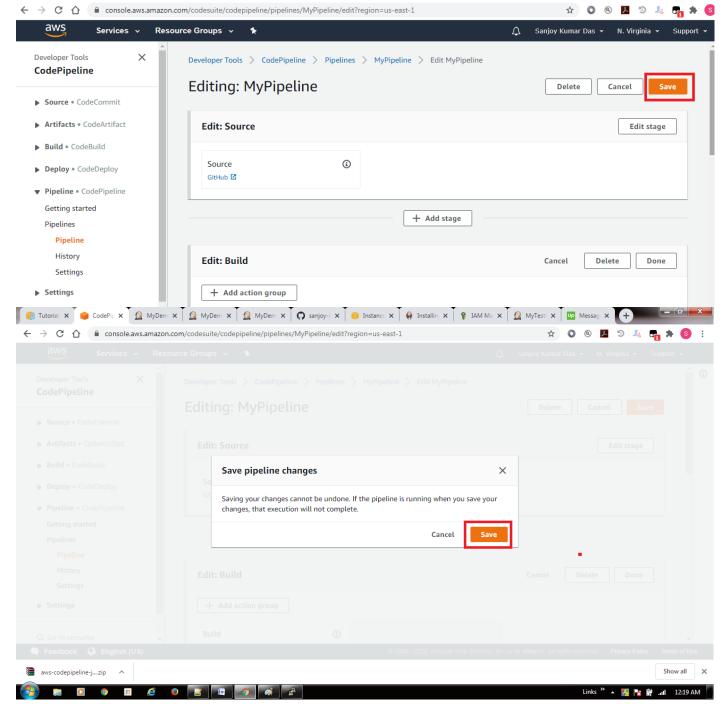




6. In **Action name**, enter **MyJenkinsTest-Action**. In **Test provider**, choose the provider name you specified in Jenkins (for example, **MyJenkinsProviderName**). In **Project name**, enter the name of the project you created in Jenkins (for example, **MyTestProject**). In **Input artifacts**, choose the artifact from the Jenkins build whose default name is **BuildArtifact**, and then choose **Done**.



7. On the **Edit** page, choose **Save pipeline changes**. In the **Save pipeline changes** dialog box, choose **Save and continue**.



8. Although the new stage has been added to your pipeline, a status of **No executions yet** is displayed for that stage because no changes have triggered another run of the pipeline. To run the sample through the revised pipeline, on the pipeline details page, choose **Release change**.

