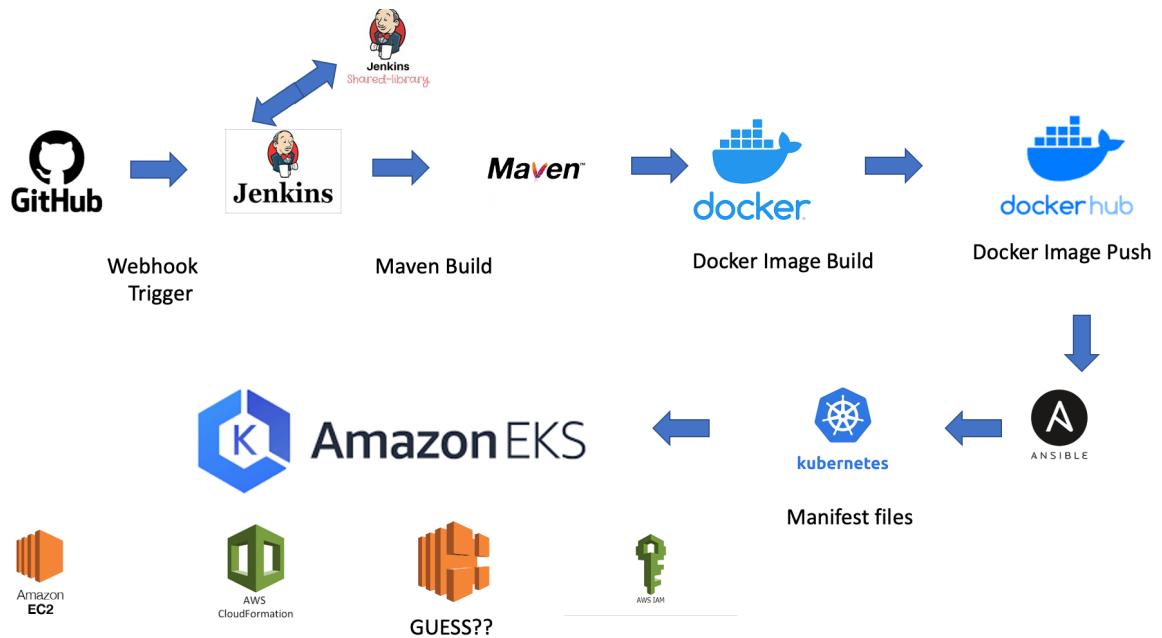


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<https://github.com/DEVOPS-WITH-WEB-DEV/jenkins-shared-library1.git>

<https://github.com/DEVOPS-WITH-WEB-DEV/spring-cloud-kubernetes.git>

PREREQUISITES

- 1) AWS LOGIN
- 2) DOCKER HUB LOGIN
- 3) GITHUB HUB LOGIN

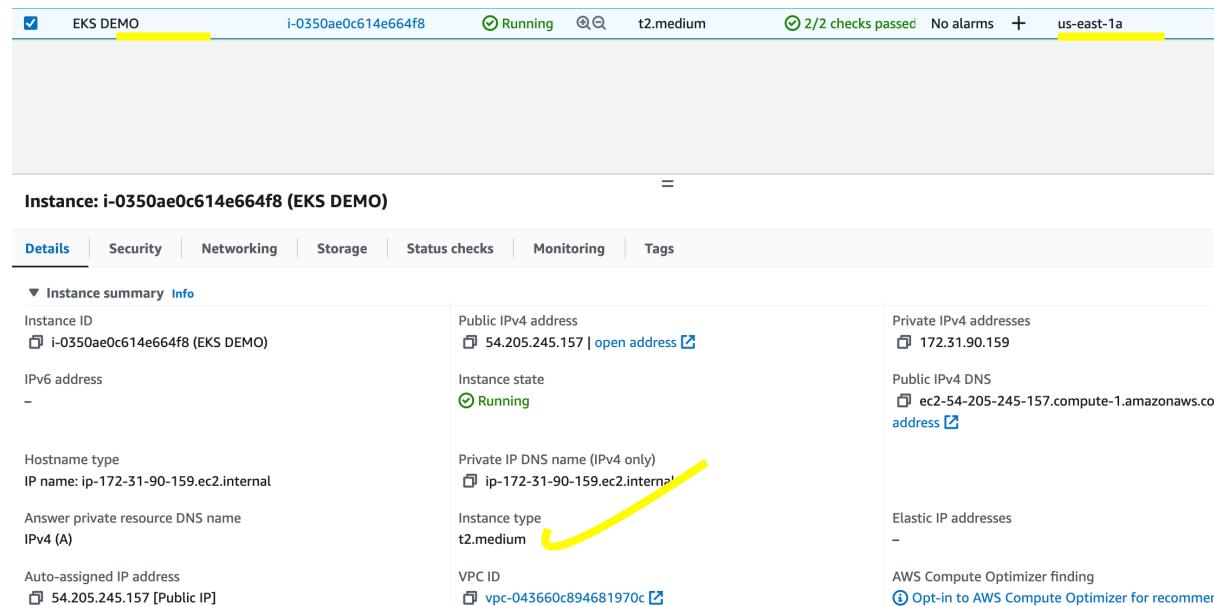
****** COST WILL OCCUR IN AWS ACCOUNT*****

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STEP 1 – CREATE A T2.MEDIUM UBUNTU EC2 INSTANCE IN AWS IN US-WEST-1 REGION



STEP 2 - Install JDK on AWS EC2 Instance

```
sudo apt-get update
```

```
sudo apt install openjdk-11-jre-headless -y
```

```
java --version
```

STEP3 - Install and Setup Jenkins

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```
curl -fsSL https://pkg.jenkins.io/debian-stable/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-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null
```

```
sudo apt update  
sudo apt install jenkins  
sudo systemctl status jenkins
```

```
No containers need to be restarted.  
No user sessions are running outdated binaries.  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
● jenkins.service - Jenkins Continuous Integration Server  
  Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)  
  Active: active (running) since Fri 2023-04-14 03:46:07 UTC; 2s ago  
    Main PID: 5097 (java)  
      Tasks: 45 (limit: 4686)  
        Memory: 1.2G  
          CPU: 48.572s  
        CGroup: /system.slice/jenkins.service
```

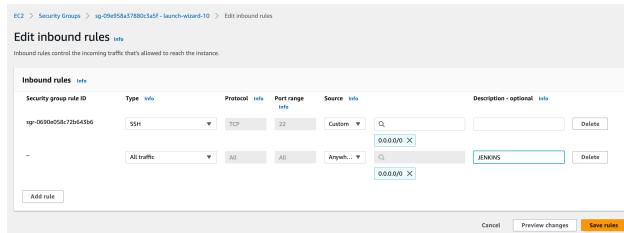
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Step 4: Setup Jenkins

- Now go to AWS dashboard -> EC2 -> Instances(running)and click on Jenkins-EC2
- Copy Public IPv4 address.
- Change the SG to open for Jenkins.



- Alright now we know the public IP address of the EC2 machine, so now we can access Jenkins from the browser using the public IP address followed by port 8080.
- Copy the below key and paste it on JENKINS

```
cat: /var/lib/jenkins/secrets/initialAdminPassword: Permission denied
ubuntu@ip-172-31-90-159:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
4a7db9ed7fed46e7a11a305ade8a5d5b
ubuntu@ip-172-31-90-159:~$
```

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Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password is stored in the log (**not sure where to find it?**) and this file on the server:

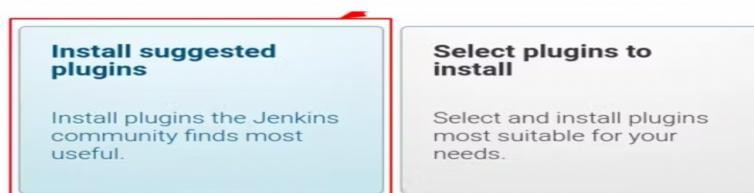
`/var/lib/jenkins/secrets/initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password

.....

- After completing the installation of the suggested plugin you need to set the **First Admin User** for Jenkins.



The screenshot shows the Jenkins "Getting Started" screen with the "Create First Admin User" section highlighted. It includes fields for "Username" (admin), "Password" (a redacted password), "Confirm password" (a redacted password), "Full name" (sunita), and "E-mail address" (sunita123@gmail.com). There is also a "Skip" button at the bottom.

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STEP 5 - Update visudo and assign administration privileges to jenkins user

- Open the file /etc/sudoers in **vi** mode
sudo vi /etc/sudoers
- Add the following line at the end of the file

jenkins ALL=(ALL) NOPASSWD: ALL

-After adding the line save and quit the file.Now we can use Jenkins as root user and for that run the following command

sudo su - jenkins

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```
# Members of the admin group may gain root privileges
%admin  ALL=(ALL)  ALL

# Allow members of group sudo to execute any command
%sudo    ALL=(ALL:ALL)  ALL

# See sudoers(5) for more information on "@include" directives

@includefile /etc/sudoers.d
-- INSERT --
jenkins  ALL=(ALL)  NOPASSWD:  ALL

@includefile /etc/sudoers.d
:wa!
```

STEP6 - Install Docker with user jenkins

```
sudo apt install docker.io
docker --version
docker ps
sudo usermod -aG docker jenkins
sudo reboot
```

STEP 7 - Install and Setup AWS and EKS CLI

```
sudo apt install awscli
curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
unzip awscliv2.zip
```

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```
sudo ./aws/install --update  
aws --version
```

EKSCTL INSTALLATION

```
curl --silent --location  
"https://github.com/weaveworks/eksctl/releases/latest/download/e  
ksctl_$(uname -s)_amd64.tar.gz" | tar xz -C /tmp  
  
sudo mv /tmp/eksctl /usr/local/bin  
  
eksctl version
```

STEP 8 - Configure the AWS CLI so that it can authenticate and communicate with the AWS environment.

COMMAND : aws configure

Once you execute the above command it will ask for the following information -

1. AWS Access Key ID [None]: YOUR ACCESS KEY
2. AWS Secret Access Key [None]: YOUR SECRET KEY

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3. Default region name [None]: REGION

4. Default output format [None]:

You can click on the ***Create New Access Key*** and it will let you generate - AWS Access Key ID, AWS Secret Access Key.

```
jenkins@ip-172-31-90-159:~$  
jenkins@ip-172-31-90-159:~$  
jenkins@ip-172-31-90-159:~$ aws configure  
AWS Access Key ID [None]: XXXXXXXXXXXXXXXXXXXX  
AWS Secret Access Key [None]: XXXXXXXXXXXXXXXXXXXX  
Default region name [None]: us-east-1  
Default output format [None]:  
jenkins@ip-172-31-90-159:~$
```

STEP 9 - Install and Setup Kubectl

```
curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.23.6/bin/linux/amd64/kubectl
```

```
chmod +x ./kubectl
```

```
sudo mv ./kubectl /usr/local/bin/kubectl
```

kubectl get pods – WILL GIVE ERROR

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STEP 10 - Creating an Amazon EKS cluster using eksctl

IT WILL TAKE 15-20 MINUTES TIME TO CREATE THE CLUSTER

Now in this step, we are going to create Amazon EKS cluster using eksctl

You need the following in order to run the eksctl command

1. **Name of the cluster :** --name first-eks-cluster
2. **Version of Kubernetes :** --version 1.24
3. **Region :** --region us-west-1
4. **Nodegroup name/worker nodes :** --nodegroup-name worker-nodes
5. **Node Type :** --nodegroup-type t2.micro
6. **Number of nodes:** --nodes 2

```
eksctl create cluster --name first-eks-cluster --version 1.24 --region us-west-1 --nodegroup-name worker-nodes --node-type t2.micro --nodes 2
```

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The screenshot shows two pages from the AWS EKS console:

- Clusters Page:** Shows a single cluster named "first-eks-cluster". A yellow arrow points to the cluster name.
- Nodes Page:** Shows two worker nodes. The table data is as follows:

Node name	Instance type	Node group	Created	Status
ip-192-168-48-227.ec2.internal	t2.micro	worker-nodes	Created 3 hours ago	Ready
ip-192-168-5-98.ec2.internal	t2.micro	worker-nodes	Created 3 hours ago	Ready

STEP 11 - Add Docker and GitHub Credentials on Jenkins

- Setup Docker Hub Secret Text in Jenkins

You can set the docker credentials by going into -

Goto -> Jenkins -> Manage Jenkins -> Manage
Credentials -> Stored scoped to jenkins -> global -> Add
Credentials [GIVE YOUR DOCKER HUB CREDENTIALS]

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Update credentials

Scope ?
Global (Jenkins, nodes, items, all child items, etc)

Username ?
praveensingam1994

Treat username as secret ?

Password ?
 Concealed Change Password

ID ?
docker_cred

Description ?

- Setup GitHub Username and password into Jenkins

Now we add one more username and password for GitHub.

Goto -> Jenkins -> Manage Jenkins -> Manage Credentials -> Stored scoped to jenkins -> global -> Add Credentials

 GIT_HUB_CREDENTIALS	praveen1994dec/*****	Username with password	
 docker_cred	praveensingam1994/*****	Username with password	

STEP 11.1 -> ADD THE EKS IAM ROLE TO EC2

GO TO IAM -> CREATE ROLE

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The screenshot shows the AWS IAM 'Create role' wizard. The top navigation bar has 'IAM > Roles > Create role' highlighted. The main area is titled 'Add permissions' with an 'Info' link. On the left, there are three steps: 'Step 1 Select trusted entity', 'Step 2 Add permissions' (which is currently selected), and 'Step 3 Name, review, and create'. In the 'Add permissions' section, there's a heading 'Permissions policies (Selected 1/843) Info' with a note 'Choose one or more policies to attach to your new role.' Below is a search bar 'Filter policies by property or policy name and press enter.' and a table with three rows:

Policy name	Type	Description
<input checked="" type="checkbox"/> AdministratorAccess	AWS m...	Provides full access to AWS services
<input type="checkbox"/> PowerUserAccess	AWS m...	Provides full access to AWS services
<input type="checkbox"/> ReadOnlyAccess	AWS m...	Provides read-only access to AWS ser...

STEP 12 – ADD MAVEN IN GLOBAL TOOL CONFIGURATION

The screenshot shows the Jenkins 'Maven' configuration page. At the top, it says 'Maven' and 'Edited'. Below is a 'Maven installations' section with a heading 'List of Maven installations in this system'. It shows a single entry: 'maven3' with an 'Edit' icon. There's a 'Add Maven' button with a yellow arrow pointing to it. Below that is a 'Install automatically' section with a 'Install from Apache' dropdown menu. The 'Version' dropdown also has '3.9.1' selected, indicated by another yellow arrow. At the bottom is a 'Add Installer' button.

STEP 13 – ADD JENKINS SHARED LIBRARY

Go to Manage Jenkins -> Configure System -> Global Pipeline Libraries ->

SESSION 4 – HANDSON

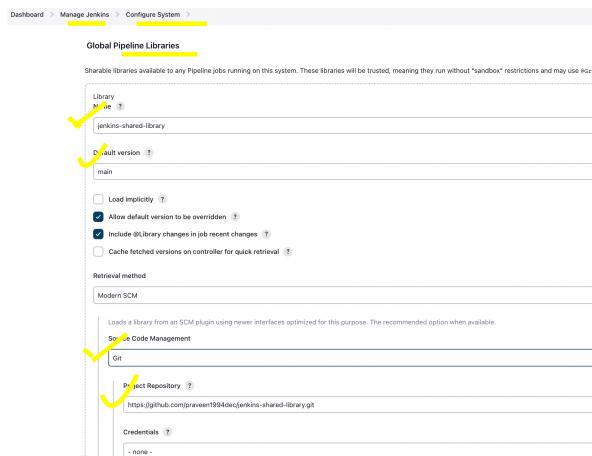
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Give Library name – jenkins-shared-library

Default Version - main

Project Repository - <https://github.com/DEVOPS-WITH-WEB-DEV/jenkins-shared-library1.git>



STEP 14 - Build, deploy and test CI/CD pipeline

Create new Pipeline: Go to Jenkins Dashboard or Jenkins home page click on New Item

Pipeline Name: Now enter Jenkins pipeline name and select Pipeline

Add pipeline script:

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Click on Configure -> Select Pipeline ->
<https://github.com/praveen1994dec/spring-cloud-kubernetes/blob/main/kubernetes-configmap-reload/Jenkinsfile> -> Copy that Jenkinsfile -> Paste it in Pipeline Script in Jenkins

STEP 15 – ANSIBLE PYTHON SETUP

sudo apt update

sudo apt install software-properties-common

sudo add-apt-repository --yes --update
ppa:ansible/ansible

sudo apt install ansible

sudo apt install python3

sudo apt install python3-pip

pip3 install Kubernetes

STEP 16 - SELECT BUILD WITH PARAMETERS [IF FAILS AGAIN START THE PIPELINE]

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Action – create

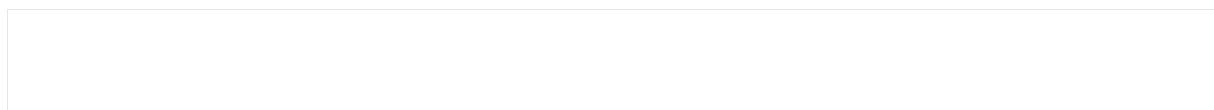
ImageName - kubernetes-configmap-reload

ImageTag – v1

AppName - kubernetes-configmap-reload

Docker_repo – Give your Docker Hub account ID

DOCKER LOGIN



ashboard > EKS_PIPELINE >

Status Pipeline EKS_PIPELINE

</> Changes This build requires parameters:

▷ Build with Parameters action

Configure Create/rollback of the deployment

create

>Delete Pipeline

Full Stage View

Rename

Pipeline Syntax

Build History trend

Filter builds... /

#19 Apr 14, 2023, 12:05 PM

#14 Apr 14, 2023, 12:04 PM

#13 Apr 14, 2023, 12:03 PM

#12 Apr 14, 2023, 11:43 AM

#11

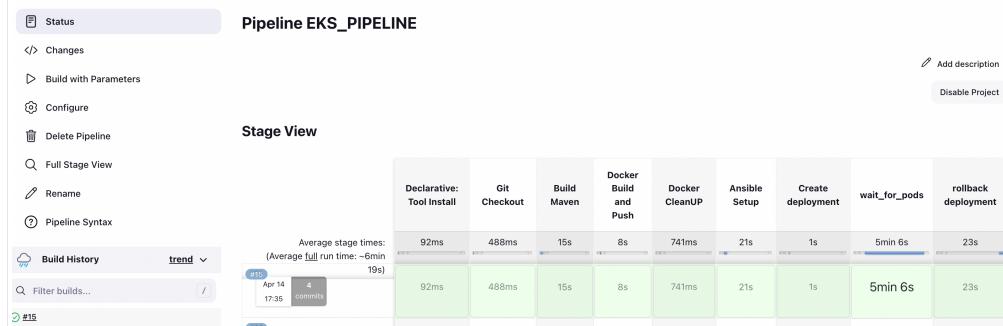
imageName Name of the docker build

imageTag Name of the docker build

appName Name of the Application

docker_repo Name of docker repository

STEP 17 – PIPELINE WILL PASS



STEP 18 – ADD WEBHOOK

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IN GITHUB PROJECT - > SETTINGS -> WEBHOOK -> URL
-> `http://<ec2_ip>:8080/github-webhook/` -> ONLY
FOR PUSH EVENTS

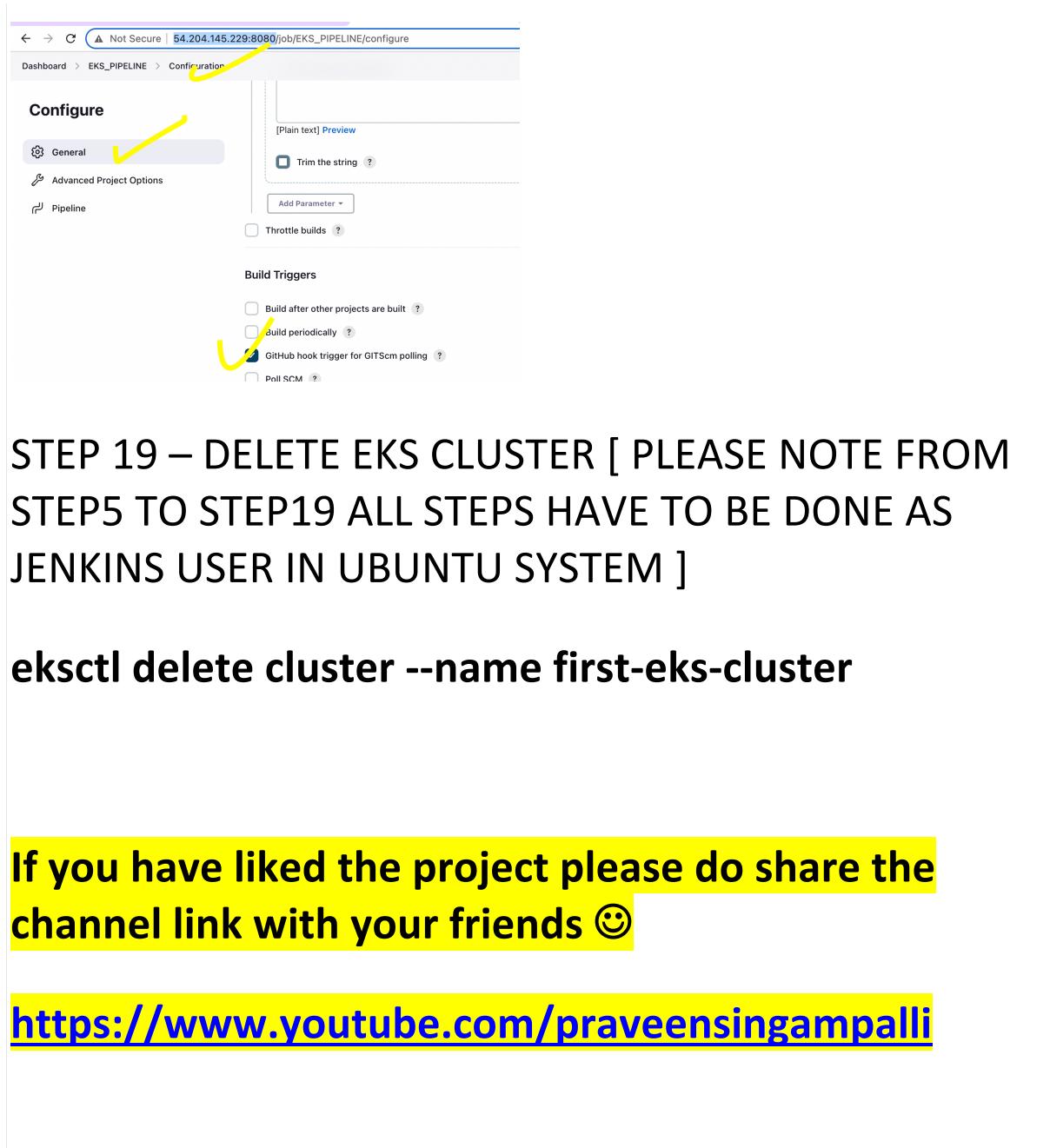
The screenshot shows the GitHub project settings for 'praveen1994dec/spring-cloud-kubernetes'. The 'Webhooks' tab is selected, highlighted by a yellow arrow. The 'Settings' sub-tab is also highlighted by a yellow arrow. The payload URL is set to `http://54.204.145.229:8080/github-webhook/`, the content type is set to `application/json`, and the event trigger is set to 'Just the push event'.

IN JENKINS -> GO TO GENERAL TAB -> BUILD TRIGGERS
-> ADD GITHUB WEB HOOK TRIGGER

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The screenshot shows the Jenkins Pipeline configuration page for a project named 'EKS_PIPELINE'. The 'General' tab is selected, indicated by a yellow arrow. Under 'Build Triggers', the 'GitHub hook trigger for GITScm polling' option is checked, also indicated by a yellow arrow. Other trigger options like 'Build after other projects are built' and 'Build periodically' are available but not selected.

STEP 19 – DELETE EKS CLUSTER [PLEASE NOTE FROM STEP5 TO STEP19 ALL STEPS HAVE TO BE DONE AS JENKINS USER IN UBUNTU SYSTEM]

eksctl delete cluster --name first-eks-cluster

If you have liked the project please do share the channel link with your friends 😊

<https://www.youtube.com/praveensingampalli>