JENKINS

Introduction to Jenkins:

Jenkins is an open source automation web server written in Java. Jenkins helps to automate the non-human part of the software development process.

Jenkins primarily known for Continuous Integration(**CI**) tool, however we can do continuous deployments(**CD**)/Delivery also.

Jenkins is open source and freeware,Previously jenkins was called as Hudson, initially this tool was maintained by Oracle, few developers had differences with Oracle and they came out and continued this tool with the name Jenkins.

Similar tools to Jenkins:

1. Hudson
2. Bamboo
3. Circle CI
4. Codepipeline (AWS)

Continuous Integration(CI): Continuous Integration (CI) is a development practice where developers integrate code into a shared repository frequently(like Git), preferably several times a day. Each integration can then be verified by an automated build, tests and automated build package also.

Continuous Deployment: It is next level of continuous Integration, Continuous Deployment is a software development practice in which every code change goes through the entire pipeline and is put into production, automatically, resulting in many production deployments every day.

Installation of jenkins in Amazon Linux/Redhat Linux:

Step-1:

Jenkins is dependent of java 1.8.0 so we want to install java1.8.0 before installing Jenkins. Use following command to install java-1.8.0

```
sudo yum install java-1.8.0-openjdk-devel -y
```

If you had multiple versions of java , if you want 1.8.0 as default use following command to change.

```
sudo update-alternatives --config java
```

Choose the number beside java-1.8.0

```
sudo update-alternatives --config javac
```

Choose the number beside java-1.8.0

Step-2:

To perform git operations in jenkins we want to install git on jenkins server. So we want git on jenkins server.

`sudo yum install git -y`

Step-3:

To perform Maven operations in jenkins we want to install Maven on jenkins server. So to install Maven use following commands.

1. `sudo wget http://repos.fedorapeople.org/repos/dchen/apache-maven/epel-apache-maven.repo -O /etc/yum.repos.d/epel-apache-maven.repo`
2. `sudo sed -i s/\$releasever/6/g /etc/yum.repos.d/epel-apache-maven.repo`
3. `sudo yum install -y apache-maven`
4. `mvn --version`

Step-4:

To install jenkins on Redhat linux use following commands.

1. `sudo wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo`
2. `sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io.key`
3. `sudo yum install jenkins -y`

Step-5:

To start jenkins use following command.

`sudo service jenkins start`

Step-6:

To Enable Jenkins start on reboot use following command.

`sudo chkconfig jenkins on`

Configuring Jenkins:

Note: Jenkins default runs on port number **8080.**

1. To access jenkins via web browser use public ip of jenkins server and use it.
   http://ip-address:8080
2. To unlock jenkins take initial admin password from following path, enter it and continue.
   `sudo cat /var/lib/jenkins/secrets/initialAdminPassword`
3. *Install suggested plugins → Continue*
4. *Create user with username, password, name and email → Save and Continue.*
5. Start using Jenkins

Creating Jenkins New Build Job:

From Jenkins Dashboard → New Item → Enter an item name → Freestyle project.

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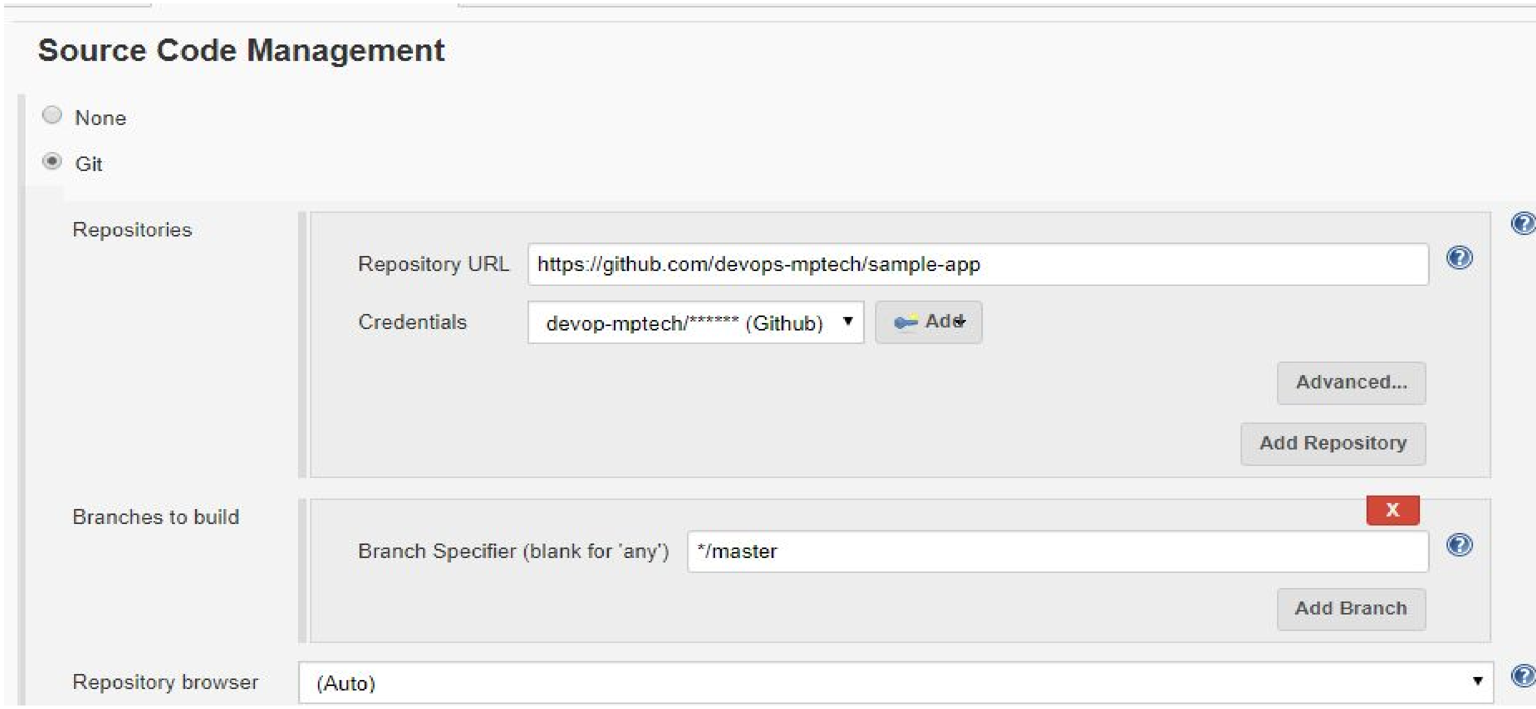
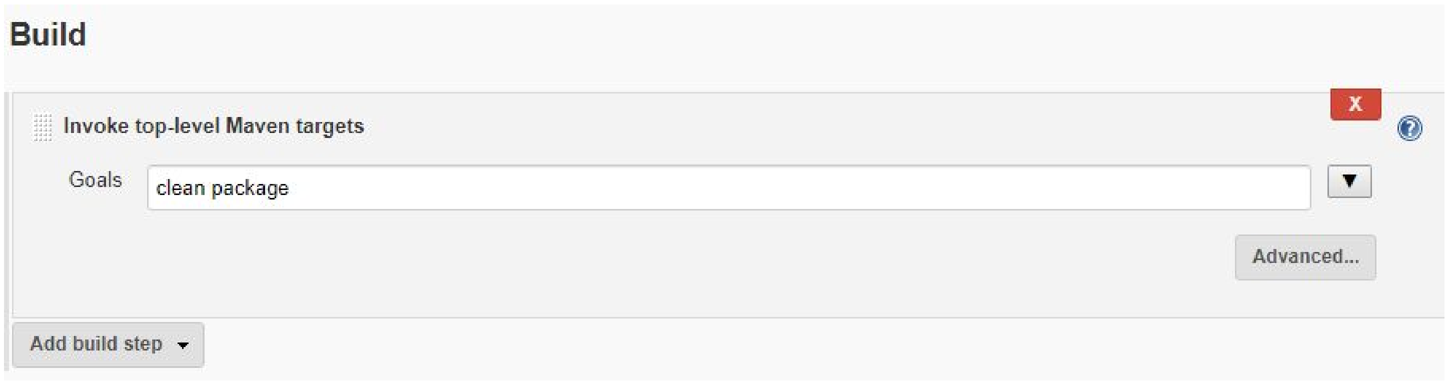
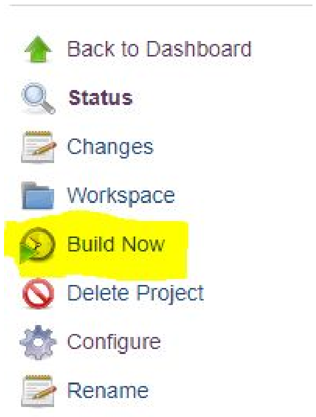
Step-1 *In Source Code Management Section Select GIT → Enter Repository URL → If that is Private Repo → Create New Credentials and select Credentials*



Step-2: Add Build Step
Take Invoke Top-Level Maven Targets



Step-3: Apply and Save
Step-4: Build Now



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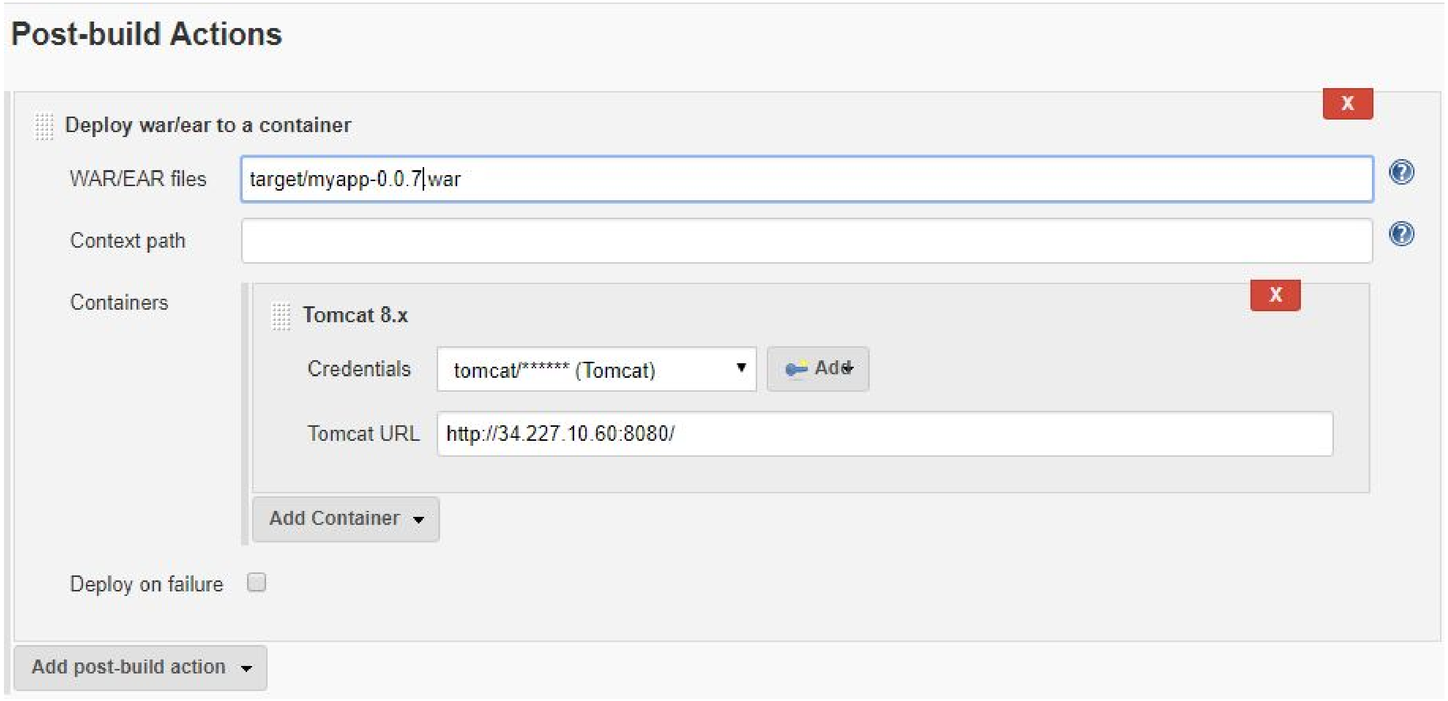
Jenkins Job to Build a war file and Deploy to Tomcat:
Before going to deploy you want to download the ***“Deploy to Container”*** Plugin from Jenkins Store
From Jenkins Dashboard → Manage Jenkins → Manage Plugins → From Available Section → Search for “Deploy to Container” plugin → Select it → Install without restart
Note: If you want to deploy war file via this Plugin you must be enable “*Tomcat Manager app”* and create at least *one user*.
Enter into Job → Configure → Add Post-build Actions → Select Deploy War/Ear to container → Enter war file location → Add Container → Select Tomcat 8.x →and configure tomcat credentials and url of tomcat → Apply and Save → Build Now.


Post-build Actions

Deploy war/ear to a container

WAR/EAR files: target/myapp-0.0.7.war

Context path:

Containers: Tomcat 8.x

Credentials: tomcat/****** (Tomcat)

Tomcat URL: http://34.227.10.60:8080/

Deploy on failure: ☐

Suppose if you don't want to change the Version of the project every time in url follow below steps:
In Build step → Add Build Step → Execute Shell → Paste the following Commands

```
cd target/
mv *.war myapp.war
```

Discarding Old Builds:
Discarding old builds enables to free the jenkins Server Volume otherwise unnecessary Jenkins Volume will full of old builds .
From your Job → In general Section → Select Discard Old Builds → There you may select → Days to keep build or Max number of Builds to Keep

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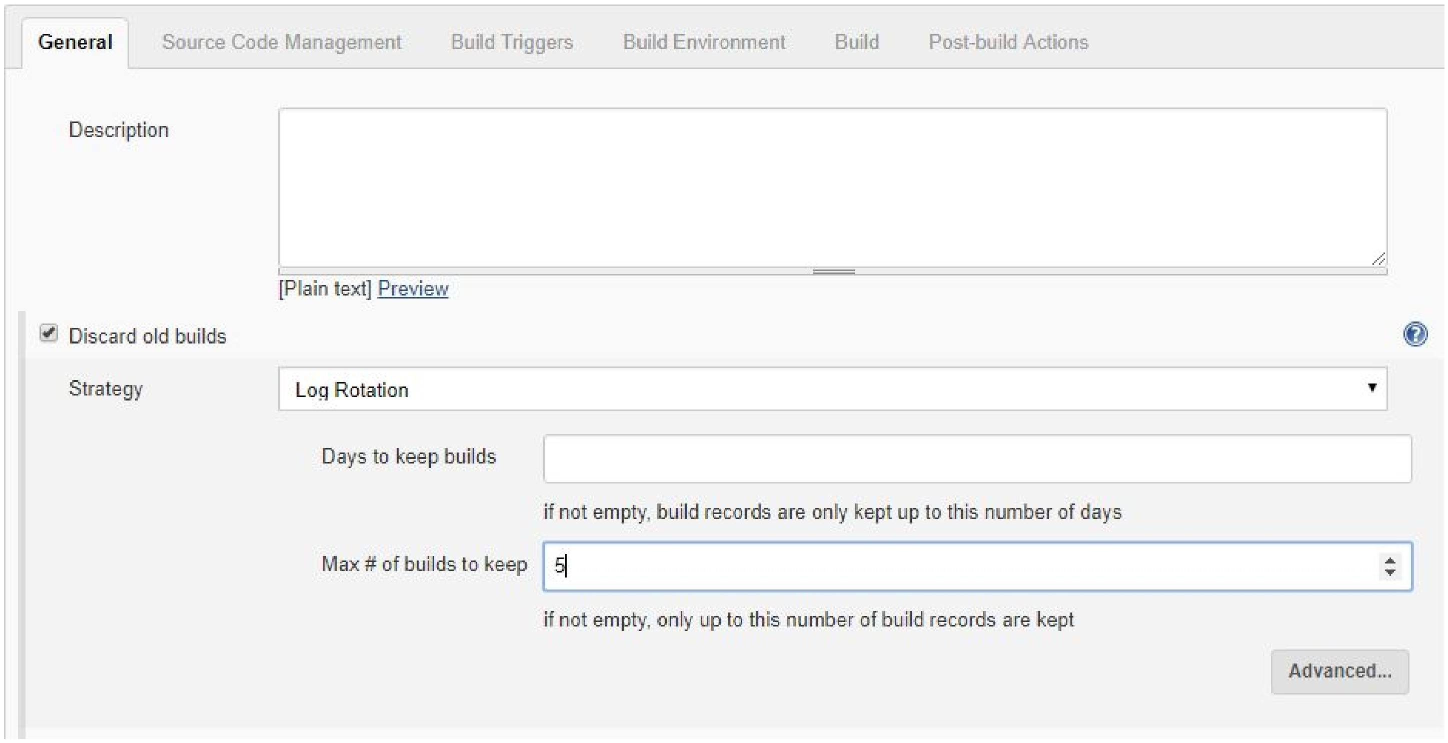


Description

[Plain text] Preview

☑ Discard old builds

Strategy: Log Rotation

Days to keep builds:

if not empty, build records are only kept up to this number of days

Max # of builds to keep: 5

if not empty, only up to this number of build records are kept

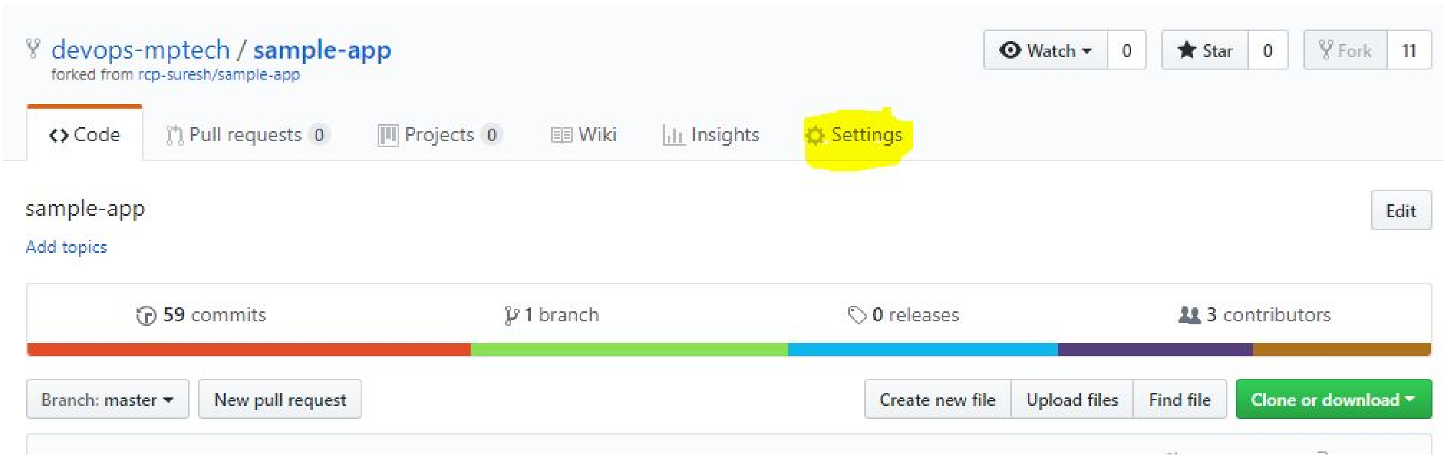
Build Triggers:

Build Tiggers enables you to Trigger the the job automatically if there are new changes in GIT

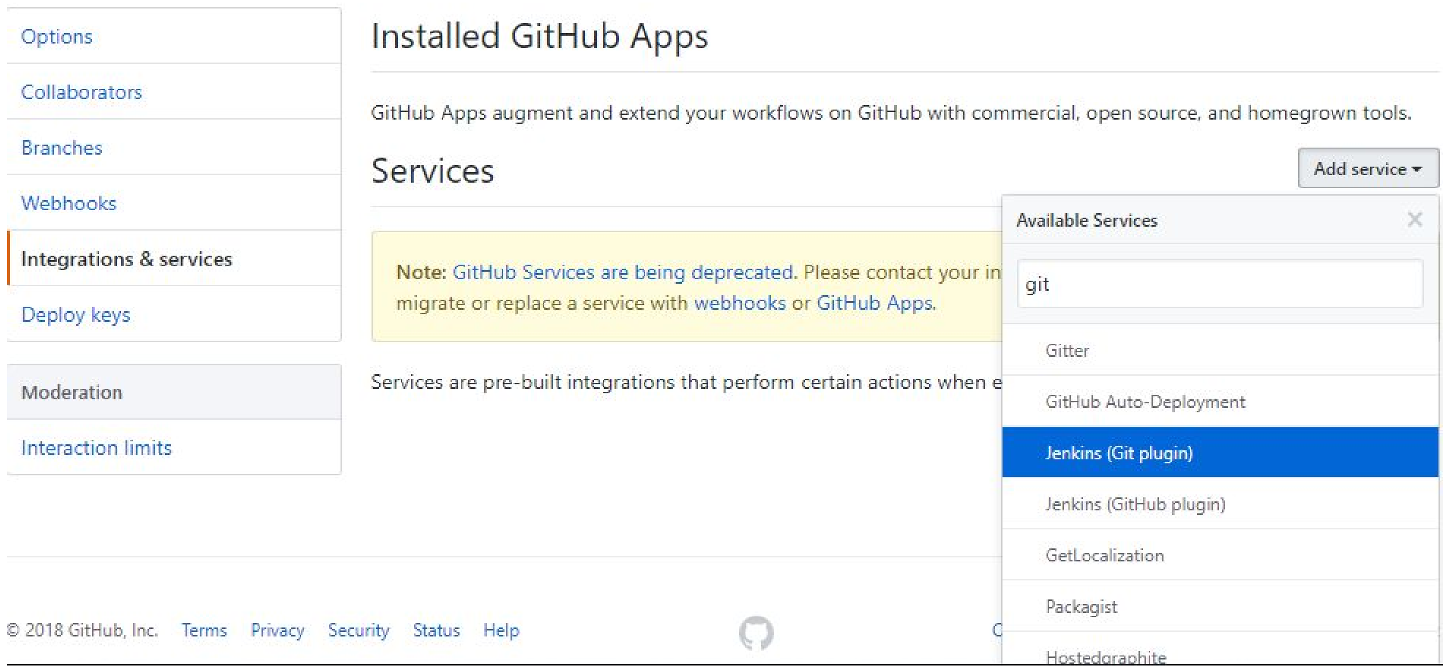
From your job → Select Build triggers → Select Poll SCM → Keep all 5 stars (Means Jenkins poll every minute your GIT) → Save

This will unnecessarily waste your jenkins RAM by polling your GIT account every minute. So better approach is Select poll SCM and don't fill any thing in box.

From your Github account → Open your Project → Settings → Integration and Services → Add Service → Search Jenkins(Git) Plugin → Enter the Jenkins URL



Address: *MP Techno Solutions*, Above Titan ShowRoom, Marathahalli, Bangalore, Phone: 9606955170/1/2/3



Options
Collaborators
Branches
Webhooks
Integrations & services
Deploy keys

Moderation
Interaction limits

Installed GitHub Apps

GitHub Apps augment and extend your workflows on GitHub with commercial, open source, and homegrown tools.

Services

Add service

Note: GitHub Services are being deprecated. Please contact your in
migrate or replace a service with webhooks or GitHub Apps.

Services are pre-built integrations that perform certain actions when e

Available Services

git

Gitter
GitHub Auto-Deployment
Jenkins (Git plugin)
Jenkins (GitHub plugin)
GetLocalization
Packagist
Hostedgraphite

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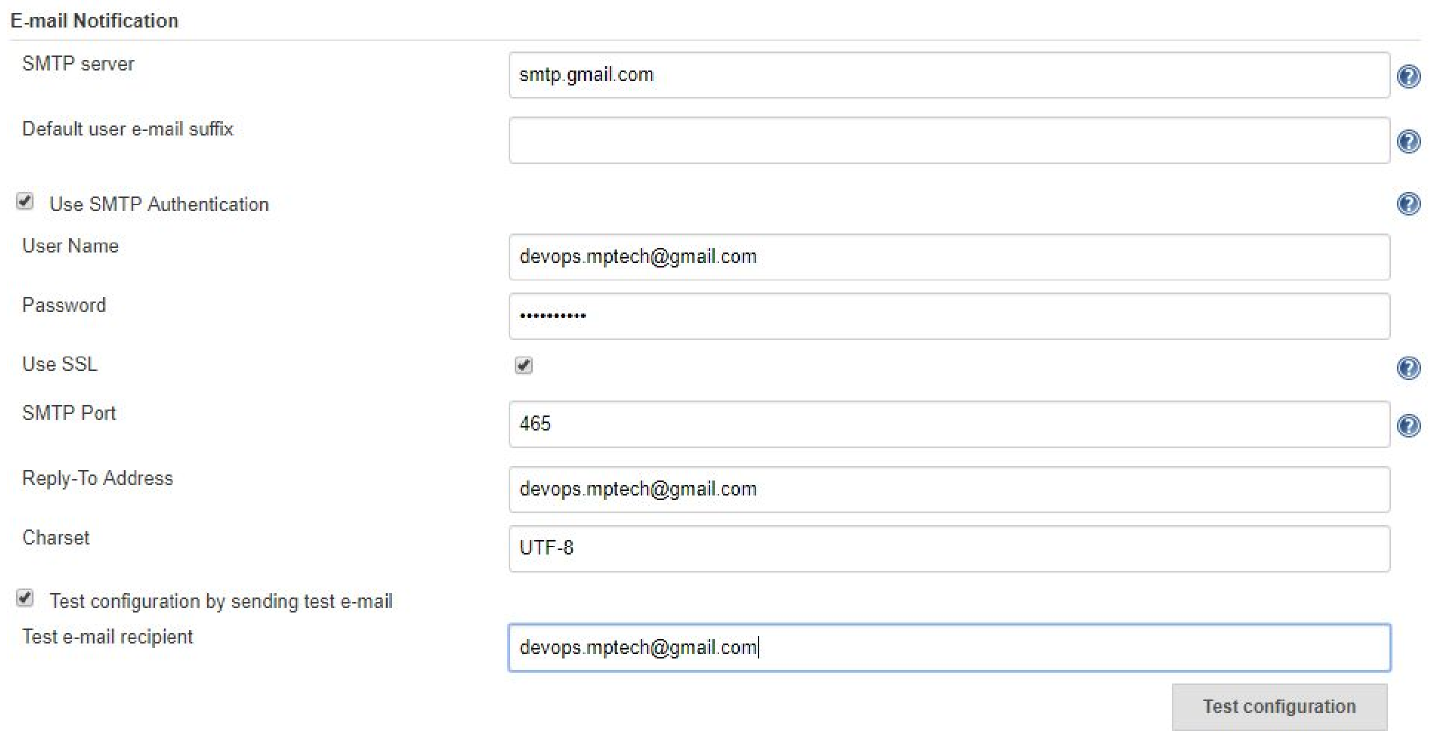
From next time onwards when ever the code changes in git it automatically triggers the job in Jenkins.

Email Configuration to Jenkins:

This will enable whenever your Jenkins job will fails Jenkins will sends email automatically to configured email addresses. To enable email configuration follow the steps.

From Jenkins Dashboard → Manage Jenkins → Configure System → EMail Notification → Configure Gmail SMTP Server Details.



E-mail Notification

SMTP server	smtp.gmail.com
Default user e-mail suffix	
✓ Use SMTP Authentication	
User Name	devops.mptech@gmail.com
Password	••••••••••
Use SSL	✓
SMTP Port	465
Reply-To Address	devops.mptech@gmail.com
Charset	UTF-8
✓ Test configuration by sending test e-mail	
Test e-mail recipient	devops.mptech@gmail.com

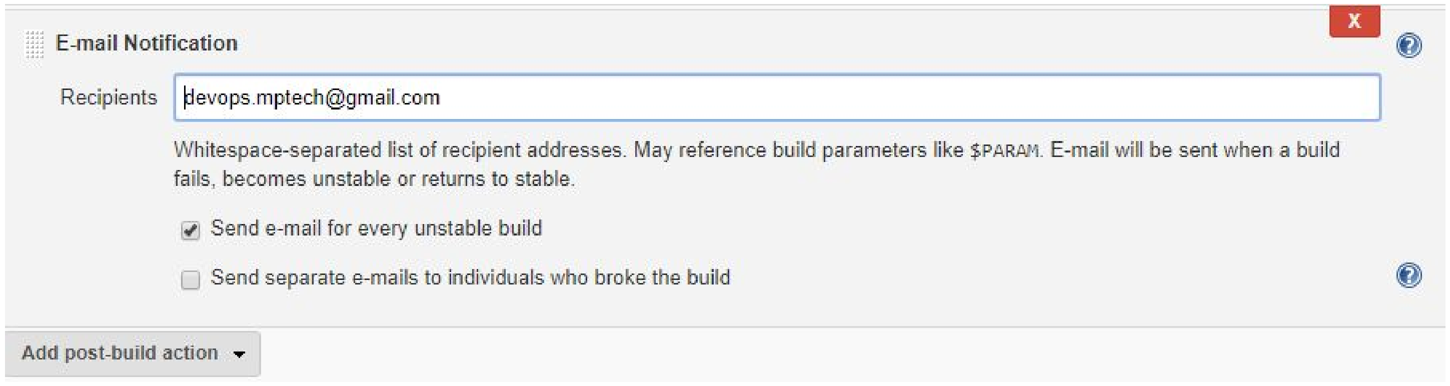
Test configuration

SMTP server(smtp.gmail.com) → Select Use SMTP Authentication → Put your gmail id → Put your gmail password → Select SSL → SMTP port 465 → Save

Note: In Real time you don't want to configure Gmail server settings, you want to configure your company smtp server settings.

After configuring you want to assign this to your Job follow the steps.

From your Job → Configure → Post Build Actions → Email Notification → Enter who wants to receive the emails for this job → And select Send email for every unstable build → Save



Recipients: devops.mptech@gmail.com

Whitespace-separated list of recipient addresses. May reference build parameters like $PARAM. E-mail will be sent when a build fails, becomes unstable or returns to stable.

[✓] Send e-mail for every unstable build

[ ] Send separate e-mails to individuals who broke the build