Jenkins task

This project demonstrates a complete CI/CD pipeline using Jenkins, Docker, GitHub, and AWS EC2, integrated with webhooks and email notifications. Whenever a change is pushed to the repository, the webhook triggers Jenkins to automatically clone the code, build a Docker image, log in to DockerHub, push the image, and send real-time email notifications for success or failure. The pipeline is fully automated, easy to configure, and ensures reliable deployments, making it production-ready and highly useful for real-world DevOps workflows.

EC2 creating using the AWS cloud Shell

```
aws ec2 run-instances \
  --image-id ami-02d26659fd82cf299\
  --count 1 \
  --instance-type t2.medium \
  --security-group-ids sg-02602e6dba9bd4b7d \
  --subnet-id subnet-07d6f1903894d6e06\
  --tag-specifications 'ResourceType=instance,Tags=[{Key=Name,Value=My-T2Medium-Instance}]'
```

Step-by-Step Guide to Set Up Jenkins Email Notifications with Gmail

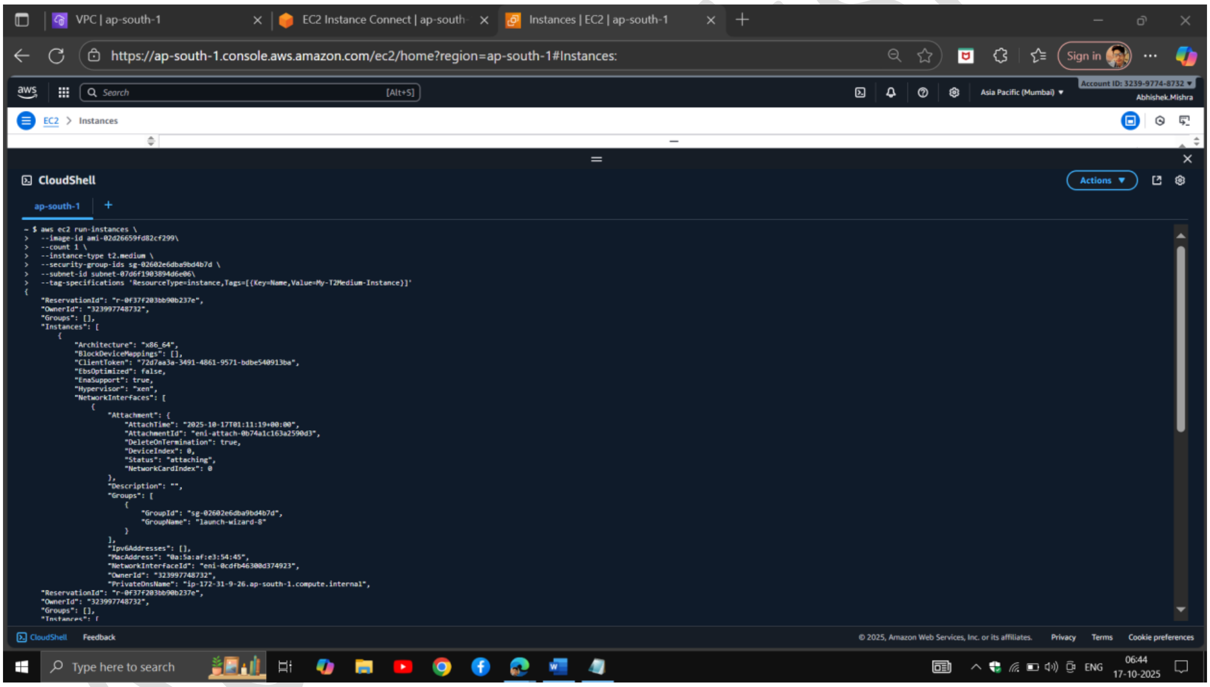
1. Create a new Gmail account
   - Use a fresh email dedicated for Jenkins notifications, e.g., yourproject.ci@gmail.com.
   - This ensures security and avoids exposing your personal email in CI/CD logs.
2. Enable 2-Step Verification on Gmail
   - Go to Google Account Security.

- Under “Signing in to Google”, enable 2-Step Verification.
- Follow the on-screen instructions to complete the setup.

3. Generate an App Password for Jenkins
    - After enabling 2-Step Verification, go to App Passwords.
    - Select “Mail” as the app and “Other (Custom name)” as the device, e.g., Jenkins.
    - Click Generate. Google will give you a 16-character app password.
    - Save this password securely; it will be used in Jenkins for SMTP authentication.
4. Install Email Extension Plugin in Jenkins
    - Open Jenkins → Manage Jenkins → Manage Plugins → Available.
    - Search for “Email Extension Plugin” and install it.
    - Restart Jenkins if required.
5. Configure Jenkins SMTP for Gmail
    - Go to Jenkins → Manage Jenkins → Configure System → Extended E-mail Notification.
    - Enter the following settings:
        - SMTP Server: smtp.gmail.com
        - SMTP Port: 465
        - Use SSL: ✅
        - SMTP Username: your new Gmail email (e.g., yourproject.ci@gmail.com)
        - SMTP Password: the App Password generated earlier
        - Default Recipients: your team email(s)
    - Test the configuration to ensure emails are delivered.
6. Integrate Email Steps in Jenkins Pipeline
    - Use the emailext step in your Jenkinsfile to send notifications after build stages:
        - On success, failure, or aborted builds.

- This ensures real-time notifications for every CI/CD event.

7. Connect GitHub Repository via Webhook
    - Go to your GitHub repository → Settings → Webhooks → Add webhook.
    - Payload URL: http://<your-jenkins-server>/github-webhook/
    - Content type: application/json
    - Select Just the push event or other relevant events.
    - Jenkins will now trigger builds automatically whenever code changes.


VPC | ap-south-1
EC2 Instance Connect | ap-south
Instances | EC2 | ap-south-1
https://ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Instances:
Search [Alt+S]
Asia Pacific (Mumbai)
Account ID: 3239-9774-8732
Abhishek.Mishra
EC2 > Instances
CloudShell
ap-south-1
Actions
CloudShell
Feedback
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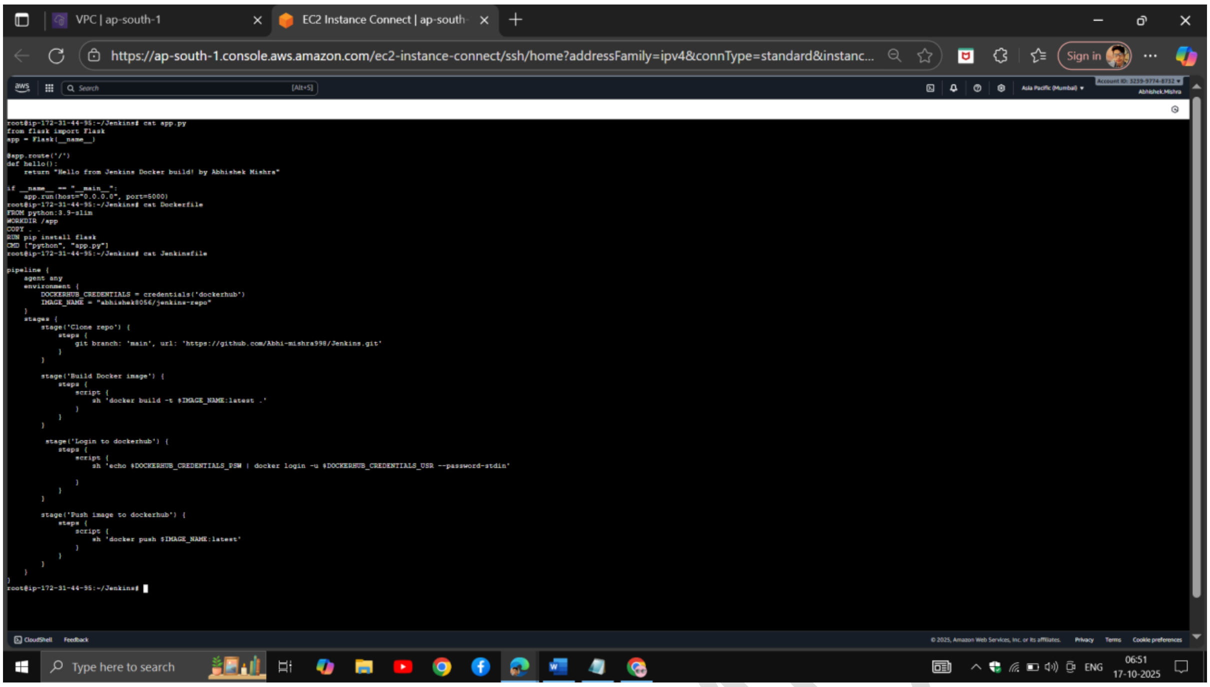
Privacy
Terms
Cookie preferences
Type here to search
ENG
06:44
17-10-2025

```
~ $ aws ec2 run-instances \
>   --image-id ami-02d26659fd82cf299\
>   --count 1 \
>   --instance-type t2.medium \
>   --security-group-ids sg-02602e6dba9bd4b7d \
>   --subnet-id subnet-07d6f1903894d6e06\
>   --tag-specifications 'ResourceType=instance,Tags=[{Key=Name,Value=My-T2Medium-Instance}]'
{
    "ReservationId": "r-0f37f203bb90b237e",
    "OwnerId": "323997748732",
    "Groups": [],
    "Instances": [
        {
            "Architecture": "x86_64",
            "BlockDeviceMappings": [],
            "ClientToken": "72d7aa3a-3491-4861-9571-bdbe540913ba",
            "EbsOptimized": false,
            "EnaSupport": true,
            "Hypervisor": "xen",
            "NetworkInterfaces": [
                {
                    "Attachment": {
                        "AttachTime": "2025-10-17T01:11:19+00:00",
                        "AttachmentId": "eni-attach-0b74a1c163a2590d3",
                        "DeleteOnTermination": true,
                        "DeviceIndex": 0,
                        "Status": "attaching",
                        "NetworkCardIndex": 0
                    },
                    "Description": "",
                    "Groups": [
                        {
                            "GroupId": "sg-02602e6dba9bd4b7d",
                            "GroupName": "launch-wizard-8"
                        }
                    ],
                    "Ipv6Addresses": [],
                    "MacAddress": "0a:5a:af:e3:54:45",
                    "NetworkInterfaceId": "eni-0cdfb46300d374923",
                    "OwnerId": "323997748732",
                    "PrivateDnsName": "ip-172-31-9-26.ap-south-1.compute.internal",
    "ReservationId": "r-0f37f203bb90b237e",
    "OwnerId": "323997748732",
    "Groups": [],
    "Instances": [
```


VPC | ap-south-1
EC2 Instance Connect | ap-south
https://ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanc...
Sign in
Search
[Alt+S]
Asia Pacific (Mumbai)
Abhishek.Mishra
CloudShell
Feedback
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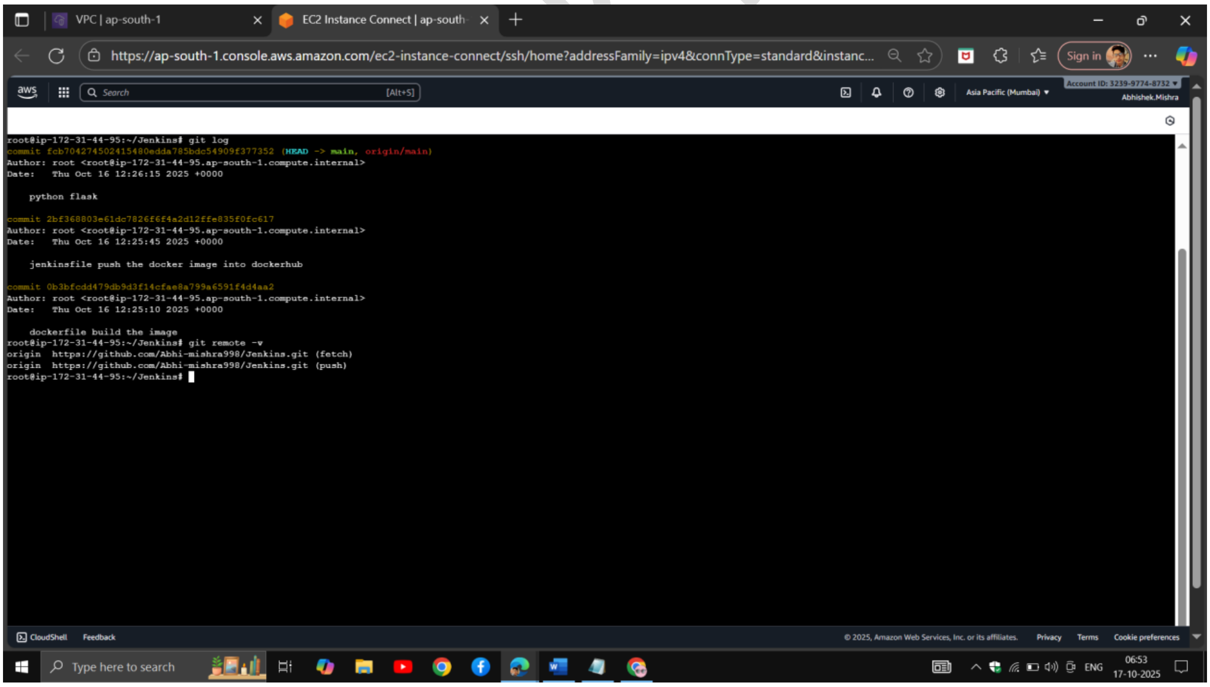
Privacy
Terms
Cookie preferences
Type here to search
ENG
06:51
17-10-2025

```
root@ip-172-31-44-95:~/Jenkins# cat app.py
from flask import Flask
app = Flask(__name__)

@app.route('/')
def hello():
    return "Hello from Jenkins Docker build! by Abhishek Mishra"

if __name__ == "__main__":
    app.run(host="0.0.0.0", port=5000)
root@ip-172-31-44-95:~/Jenkins# cat Dockerfile
FROM python:3.9-slim
WORKDIR /app
COPY . .
RUN pip install flask
CMD ["python", "app.py"]
root@ip-172-31-44-95:~/Jenkins# cat Jenkinsfile

pipeline {
    agent any
    environment {
        DOCKERHUB_CREDENTIALS = credentials('dockerhub')
        IMAGE_NAME = "abhishek8056/jenkins-repo"
    }
    stages {
        stage('Clone repo') {
            steps {
                git branch: 'main', url: 'https://github.com/Abhi-mishra998/Jenkins.git'
            }
        }

        stage('Build Docker image') {
            steps {
                script {
                    sh 'docker build -t $IMAGE_NAME:latest .'
                }
            }
        }

         stage('Login to dockerhub') {
            steps {
                script {
                    sh 'echo $DOCKERHUB_CREDENTIALS_PSW | docker login -u $DOCKERHUB_CREDENTIALS_USR --password-stdin'

                }
            }
        }

        stage('Push image to dockerhub') {
            steps {
                script {
                    sh 'docker push $IMAGE_NAME:latest'
                }
            }
        }
    }
}
root@ip-172-31-44-95:~/Jenkins#
```


VPC | ap-south-1
EC2 Instance Connect | ap-south
https://ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanc...
Sign in
Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 3239-9774-8732
Abhishek.Mishra
CloudShell
Feedback
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Privacy
Terms
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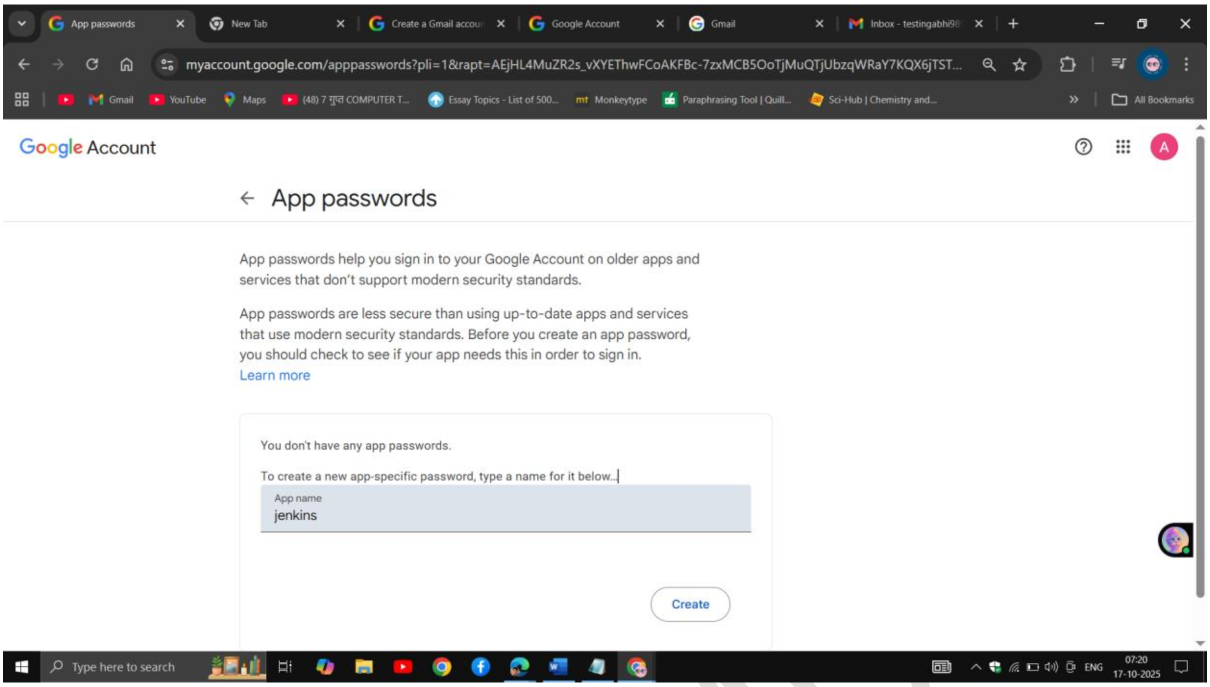
Type here to search
ENG
06:53
17-10-2025

```
root@ip-172-31-44-95:~/Jenkins# git log
commit fcb704274502415480edda785bdc54909f377352 (HEAD -> main, origin/main)
Author: root <root@ip-172-31-44-95.ap-south-1.compute.internal>
Date:   Thu Oct 16 12:26:15 2025 +0000

    python flask

commit 2bf368803e61dc7826f6f4a2d12ffe835f0fc617
Author: root <root@ip-172-31-44-95.ap-south-1.compute.internal>
Date:   Thu Oct 16 12:25:45 2025 +0000

    jenkinsfile push the docker image into dockerhub

commit 0b3bfcdd479db9d3f14cfae8a799a6591f4d4aa2
Author: root <root@ip-172-31-44-95.ap-south-1.compute.internal>
Date:   Thu Oct 16 12:25:10 2025 +0000

    dockerfile build the image
root@ip-172-31-44-95:~/Jenkins# git remote -v
origin  https://github.com/Abhi-mishra998/Jenkins.git (fetch)
origin  https://github.com/Abhi-mishra998/Jenkins.git (push)
root@ip-172-31-44-95:~/Jenkins#
```



myaccount.google.com/apppasswords?pli=1&rapt=AEjHL4MuZR2s_vXYEThwFCoAKFBc-7zxMCB5OoTjMuQTjUbzqWRaY7KQX6jTST...

Google Account

App passwords

App passwords help you sign in to your Google Account on older apps and services that don't support modern security standards.

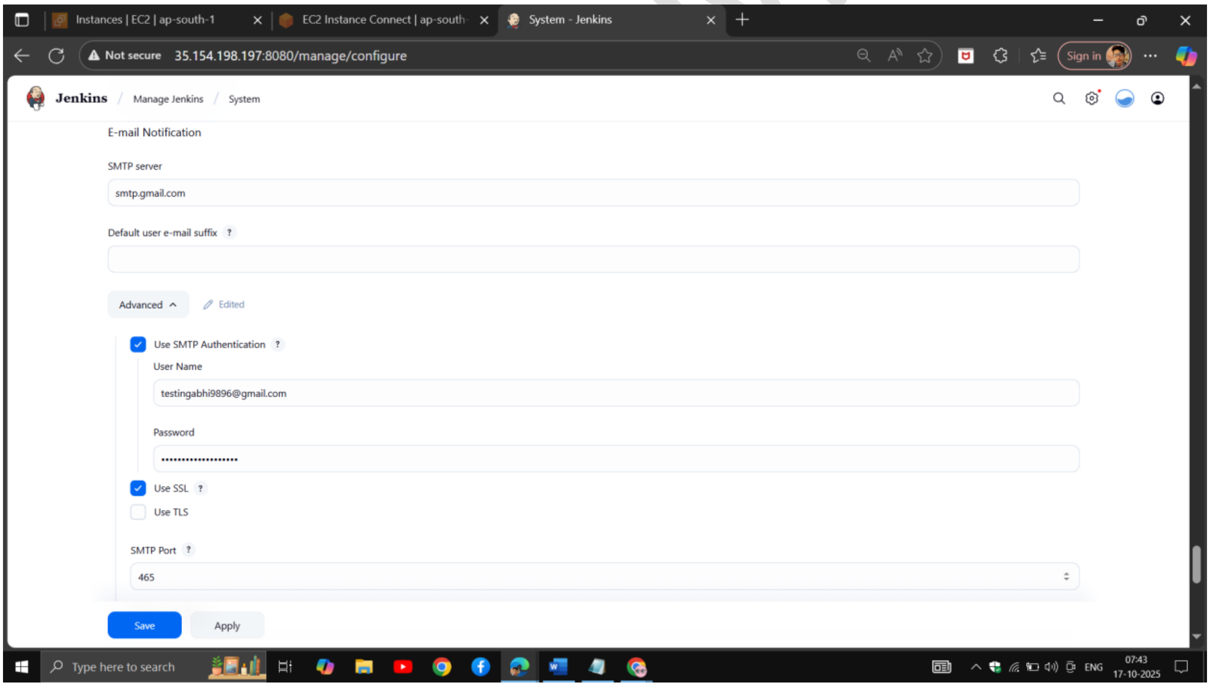
App passwords are less secure than using up-to-date apps and services that use modern security standards. Before you create an app password, you should check to see if your app needs this in order to sign in.
Learn more

You don't have any app passwords.

To create a new app-specific password, type a name for it below..

App name
jenkins

Create



Not secure 35.154.198.197:8080/manage/configure

E-mail Notification

SMTP server
smtp.gmail.com

Default user e-mail suffix ?

Advanced ^ Edited

☑ Use SMTP Authentication ?

User Name
testingabhi9896@gmail.com

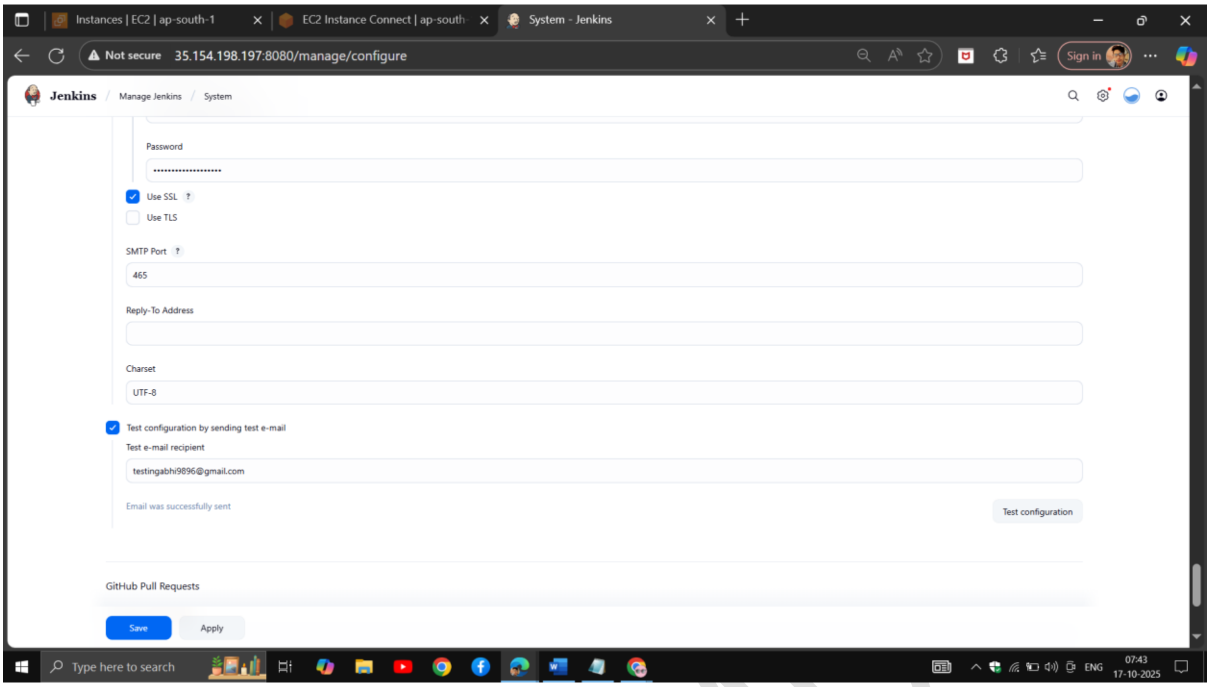
Password
••••••••••••••••••••

☑ Use SSL ?

□ Use TLS

SMTP Port ?
465

Save Apply



Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
System - Jenkins
Not secure
35.154.198.197:8080/manage/configure
Jenkins / Manage Jenkins / System

Password

••••••••••••••••••••

☑ Use SSL

□ Use TLS

SMTP Port

465

Reply-To Address

Charset

UTF-8

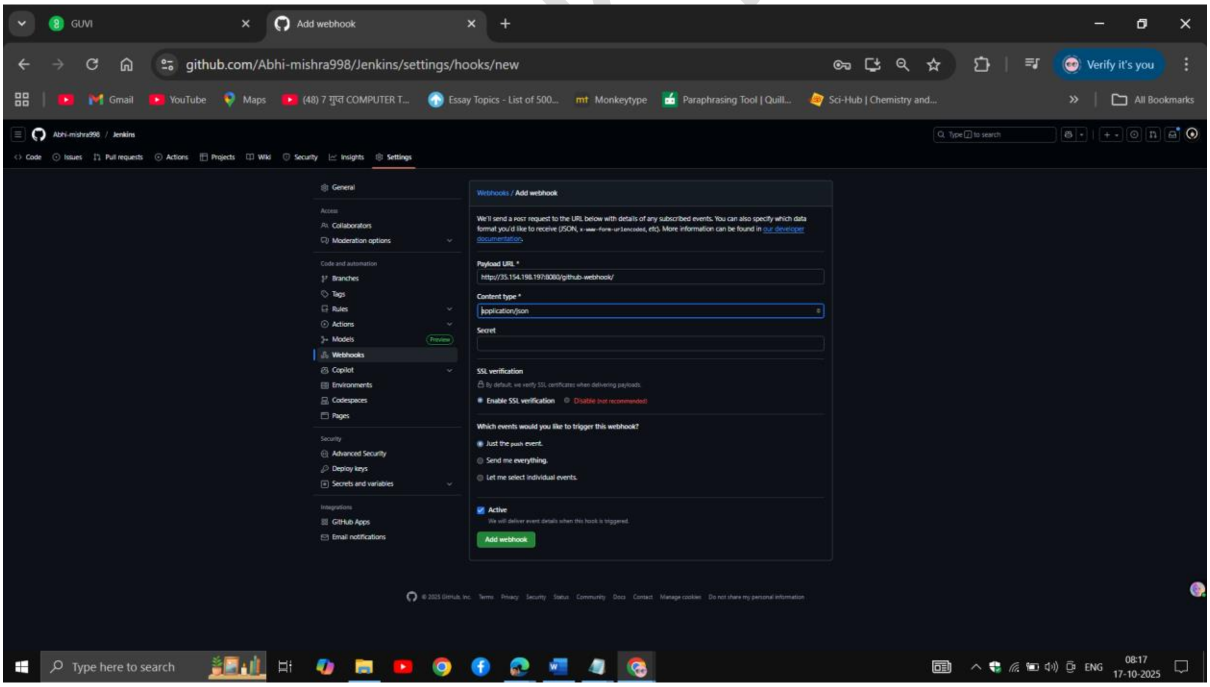
☑ Test configuration by sending test e-mail

Test e-mail recipient

testingabhi9896@gmail.com

Email was successfully sent

Test configuration
GitHub Pull Requests
Save
Apply
Type here to search
ENG
07:43
17-10-2025



Webhooks / Add webhook

We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in our developer documentation.

Payload URL *

http://35.154.198.197:8080/github-webhook/

Content type *

application/json

Secret

SSL verification

By default, we verify SSL certificates when delivering payloads.

● Enable SSL verification ○ Disable (not recommended)

Which events would you like to trigger this webhook?

● Just the push event.

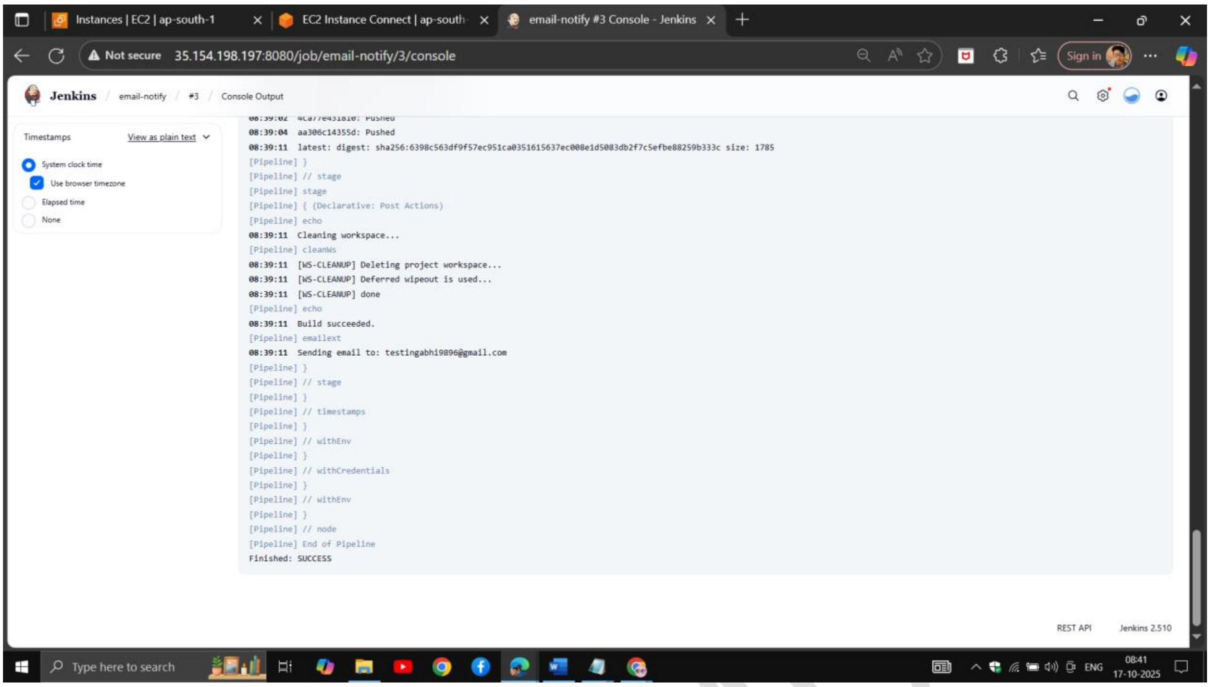
○ Send me everything.

○ Let me select individual events.

☑ Active

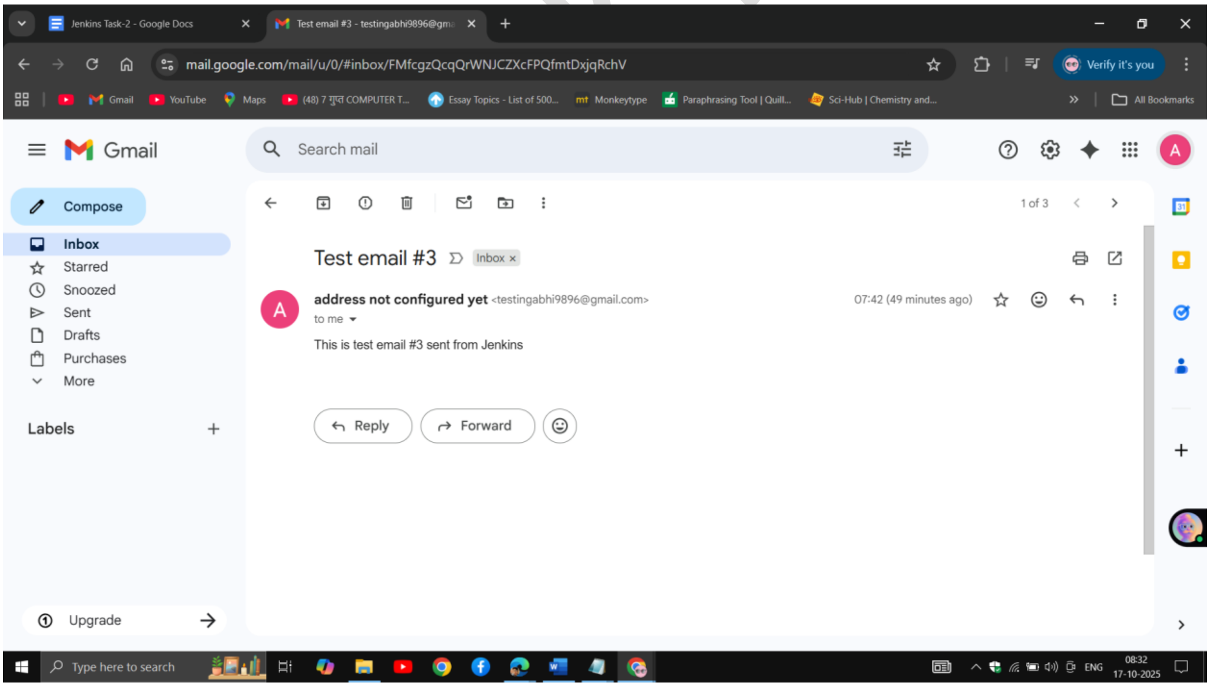
We will deliver event details when this hook is triggered.

Add webhook
© 2025 GitHub, Inc. Terms Privacy Security Status Community Docs Contact Manage cookies Do not share my personal information
Type here to search
ENG
08:17
17-10-2025



Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
email-notify #3 Console - Jenkins
Not secure 35.154.198.197:8080/job/email-notify/3/console
Jenkins / email-notify / #3 / Console Output
Timestamps
View as plain text
● System clock time
☑ Use browser timezone
○ Elapsed time
○ None
REST API
Jenkins 2.510
Type here to search
ENG
08:41
17-10-2025

```
08:39:02  4ca77e431810: Pushed
08:39:04  aa306c14355d: Pushed
08:39:11  latest: digest: sha256:6398c563df9f57ec951ca0351615637ec008e1d5083db2f7c5efbe88259b333c size: 1785
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] echo
08:39:11  Cleaning workspace...
[Pipeline] cleanWs
08:39:11  [WS-CLEANUP] Deleting project workspace...
08:39:11  [WS-CLEANUP] Deferred wipeout is used...
08:39:11  [WS-CLEANUP] done
[Pipeline] echo
08:39:11  Build succeeded.
[Pipeline] emailext
08:39:11  Sending email to: testingabhi9896@gmail.com
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // timestamps
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```



Jenkins Task-2 - Google Docs
Test email #3 - testingabhi9896@gma
mail.google.com/mail/u/0/#inbox/FMfcgzQcqQrWNJCZXcFPQfmtDxjqRchV
Verify it's you
Gmail
YouTube
Maps
(48) 7 गुप्त COMPUTER T...
Essay Topics - List of 500...
Monkeytype
Paraphrasing Tool | Quill...
Sci-Hub | Chemistry and...
All Bookmarks
Search mail
Compose
Inbox
Starred
Snoozed
Sent
Drafts
Purchases
More
Labels
Upgrade
1 of 3
Inbox ×
Reply
Forward
Type here to search
ENG
08:32
17-10-2025

Test email #3

address not configured yet <testingabhi9896@gmail.com>

to me

07:42 (49 minutes ago)

This is test email #3 sent from Jenkins