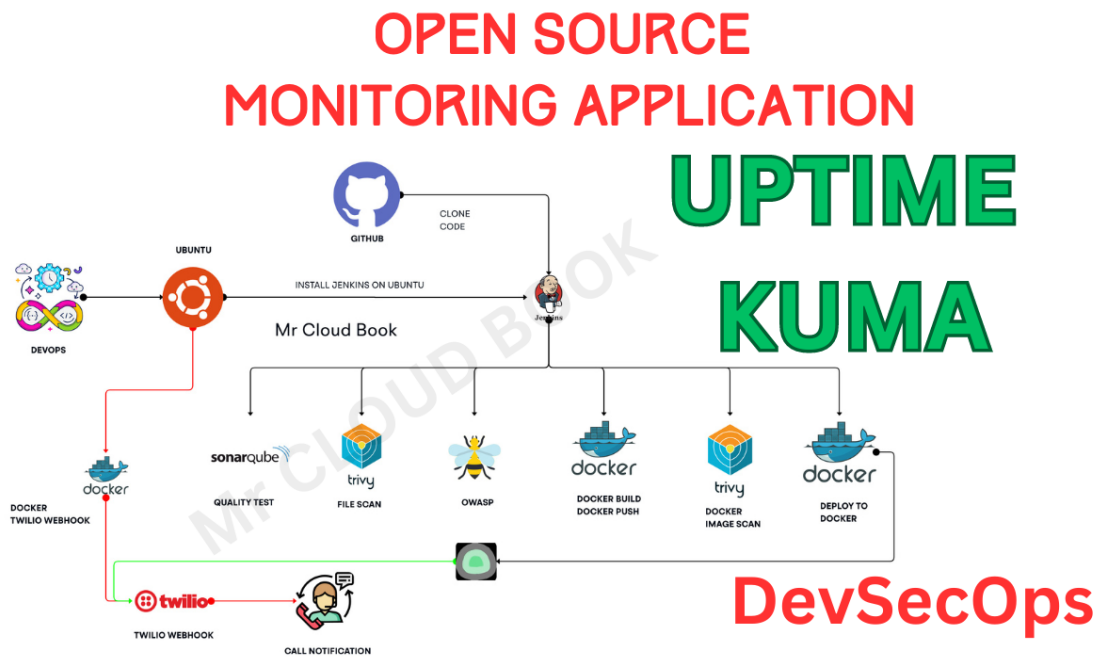
CI/CD Pipeline for Uptime-Kuma | Get Real-Time Call Alerts for Server Downtime | Open Source Monitoring



Uptime-Kuma is an open-source self-hosted monitoring tool that provides a sleek interface to track the uptime of websites, services, and APIs. When integrated into a CI/CD pipeline for a blog, it helps ensure continuous availability and performance monitoring. Here's a detailed explanation of how Uptime-Kuma can be utilized effectively in this context:

What is Uptime-Kuma?

- **Overview:** Uptime-Kuma is a self-hosted monitoring tool designed to track the uptime and performance of websites, services, and APIs.
- **Features:**
    - Real-time monitoring with customizable intervals.
    - Alerts via multiple channels (email, Slack, Telegram, etc.).
    - Historical data and uptime statistics.
    - Sleek, user-friendly interface.

Now, let's get started and dig deeper into each of these steps:-

1. AWS Account and Login

- If you don't have an AWS account, sign up at AWS Sign Up.
- Log in to the AWS Management Console.

2. Launch an EC2 Instance

A. Navigate to EC2 Dashboard:

- Go to the EC2 Dashboard.

B. Choose an Amazon Machine Image (AMI):

- Click “Launch Instance.”
- In the AMI selection screen, search for “Ubuntu 24.04”.

C. Choose an Instance Type:

- Select the t2.large instance type.
- Click “Next: Configure Instance Details.”

D. Configure Instance Details:

- Use the default settings.
- Ensure you have selected the correct VPC and subnet.
- Click “Next: Add Storage.”

E. Add Storage:

- Modify the root volume size to 30 GB.
- Click “Next: Add Tags.”

F. Add Tags:

- (Optional) Add tags for better management.
- Click “Next: Configure Security Group.”

G. Configure Security Group:

- Create a new security group.
- Set the security group name and description.
- Add a rule to allow all traffic (not recommended for production environments):
    - Type: All Traffic
    - Protocol: All
    - Port Range: All
    - Port Range : 22, 80, 443, 8080, 9000, 3001, 5000
    - Source: 0.0.0.0/0 (for IPv4) and ::/0 (for IPv6)
- **Warning:** Opening all ports is insecure and should only be done for learning purposes in a controlled environment.
- Click “Review and Launch.”

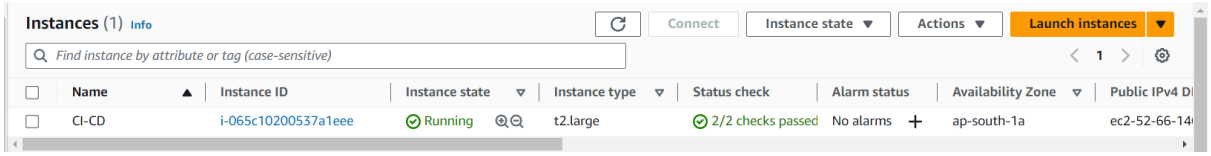
H. Review Instance Launch:

- Review all configurations.

- Click “Launch.”

I. Select/Create a Key Pair:

- Select “Create a new key pair.”
- Name the key pair.
- Download the key pair file (.pem) and store it securely.
- Click “Launch Instances.”



Install Jenkins, Docker and Trivy

To Install Jenkins

Connect to your console, and enter these commands to Install Jenkins

vi jenkins.sh

#!/bin/bash

sudo apt update -y

wget -O - https://packages.adoptium.net/artifactory/api/gpg/key/public | sudo tee /etc/apt/keyrings/adoptium.asc

echo "deb [signed-by=/etc/apt/keyrings/adoptium.asc] https://packages.adoptium.net/artifactory/deb $(awk -F= '/^VERSION_CODENAME/{print$2}' /etc/os-release) main" | sudo tee /etc/apt/sources.list.d/adoptium.list

sudo apt update -y

sudo apt install temurin-17-jdk -y

/usr/bin/java --version

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-get update -y

sudo apt-get install jenkins -y

sudo systemctl start jenkins

sudo systemctl status jenkins

sudo chmod 777 jenkins.sh

sudo su #move into root and run

./jenkins.sh # this will installl jenkins

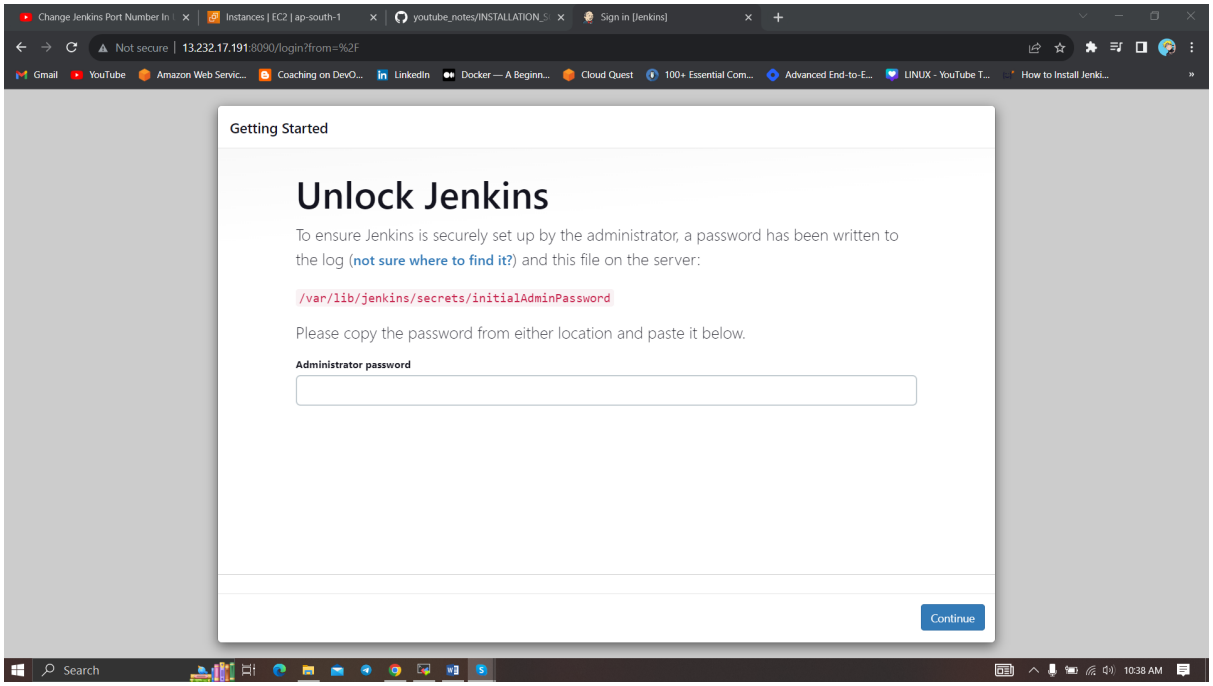
Once Jenkins is installed, you will need to go to your AWS EC2 Security Group and open Inbound Port 8080, since Jenkins works on Port 8080.

Now, grab your Public IP Address

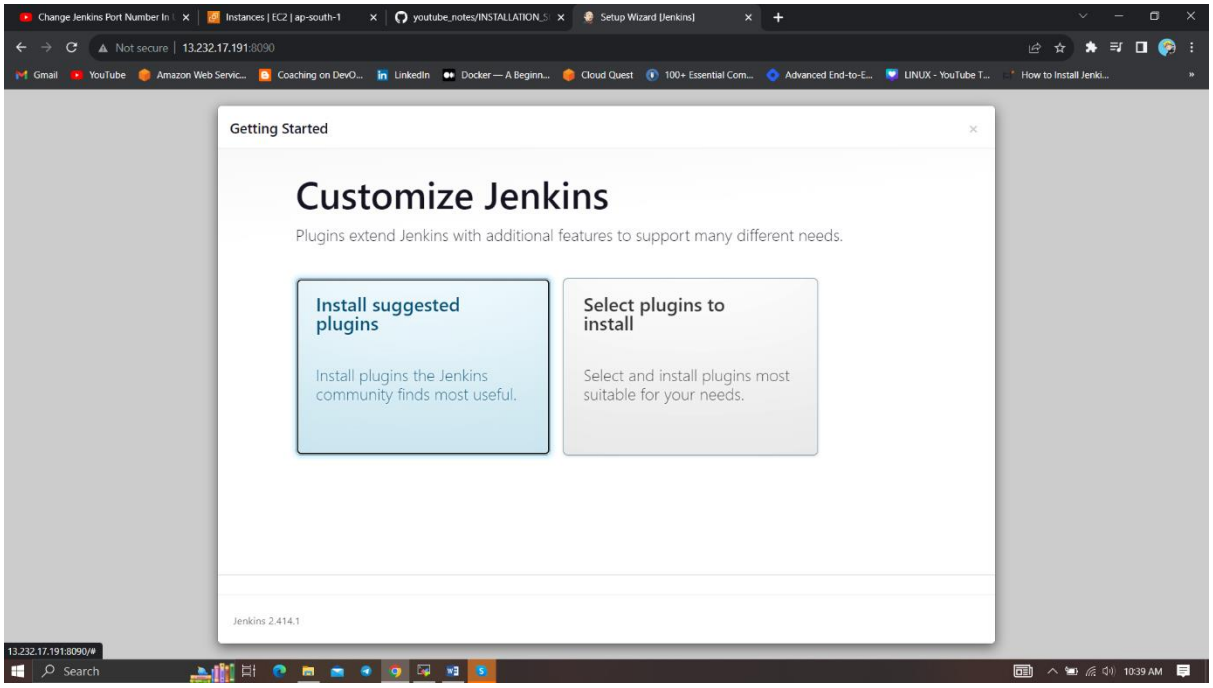
EC2 Public IP Address:8080

In Jenkins server

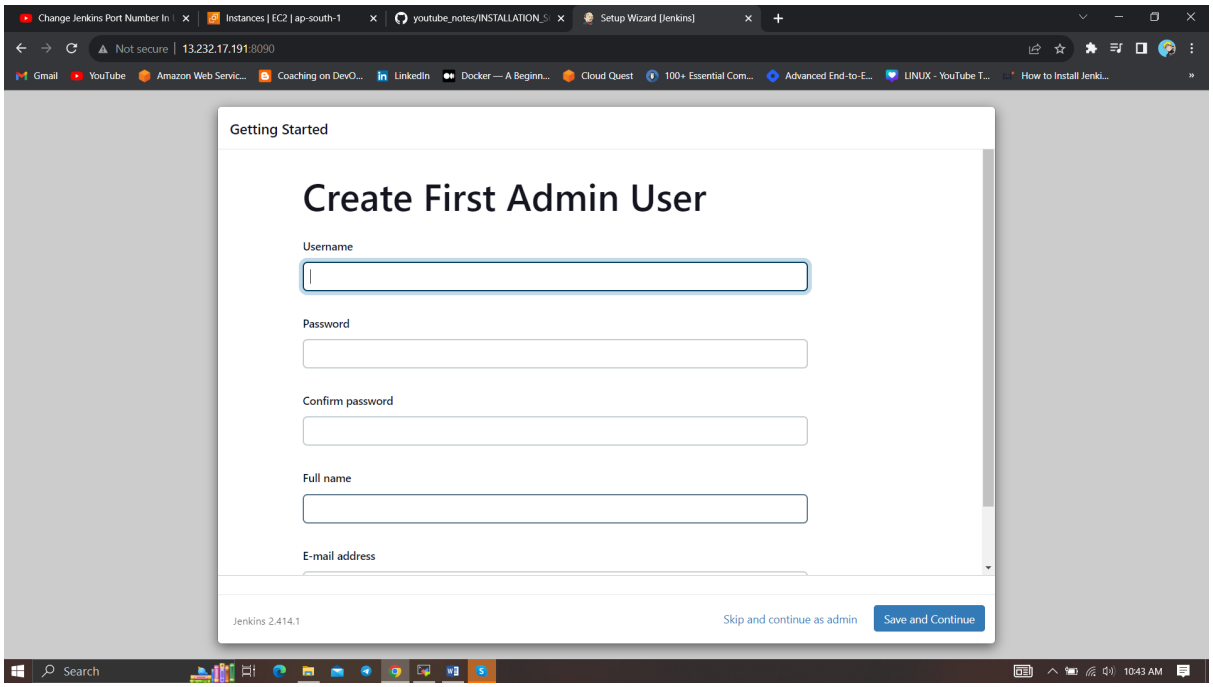
sudo cat /var/lib/jenkins/secrets/initialAdminPassword



Unlock Jenkins using an administrative password and install the suggested plugins.

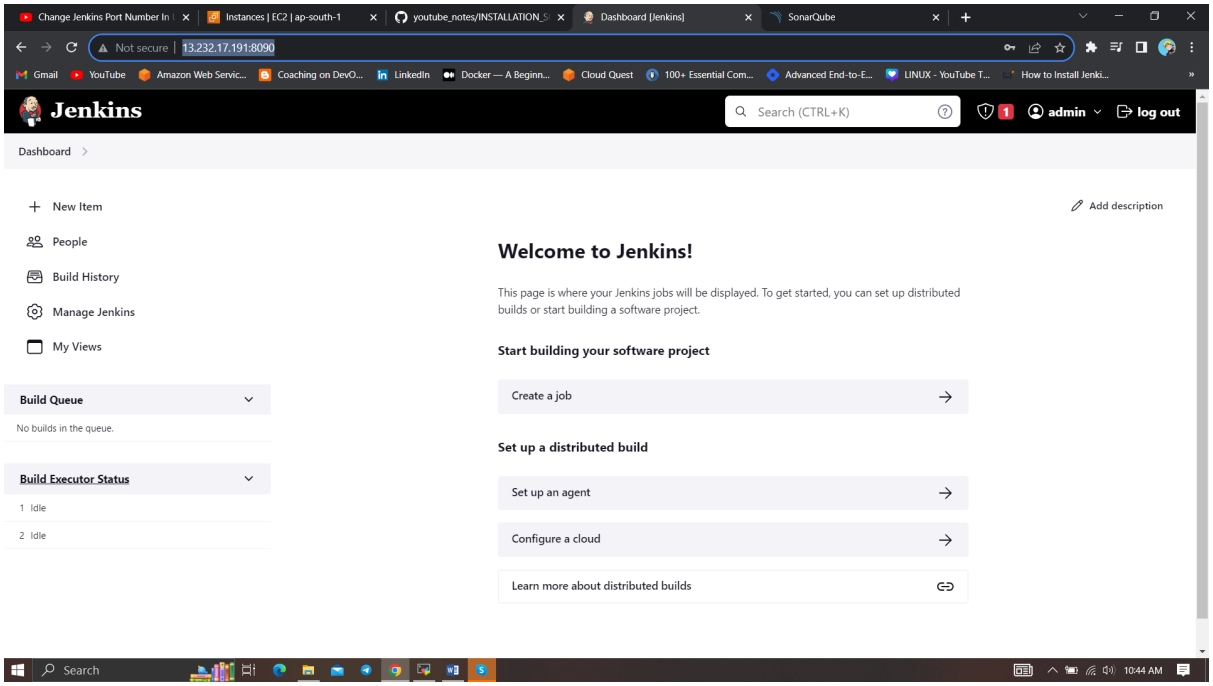


Jenkins will now get installed and install all the libraries.



Create a user click on save and continue.

Jenkins Getting Started Screen.



Install Docker

Add Docker's official GPG key:

sudo apt-get update

sudo apt-get install ca-certificates curl

sudo install -m 0755 -d /etc/apt/keyrings

sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/docker.asc

sudo chmod a+r /etc/apt/keyrings/docker.asc

Add the repository to Apt sources:

echo \

"deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] https://download.docker.com/linux/ubuntu \

$(. /etc/os-release && echo "$VERSION_CODENAME") stable" | \

sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

sudo apt-get update

sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin -y

sudo usermod -aG docker ubuntu

newgrp docker

sudo chmod 777 /var/run/docker.sock

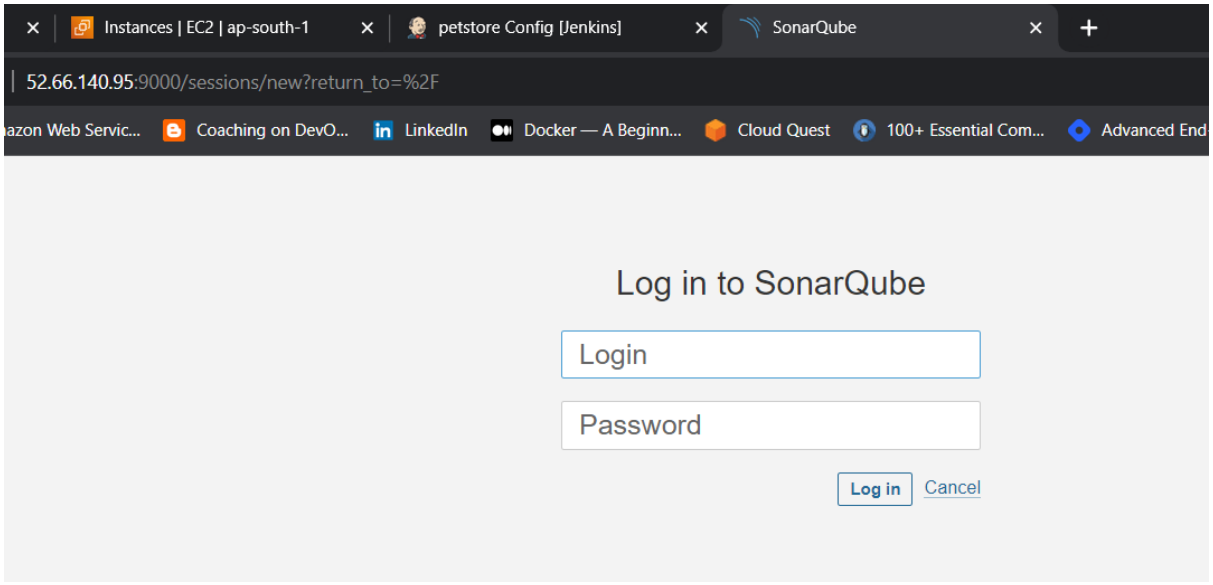
After the docker installation, we create a sonarqube container (Remember to add 9000 ports in the security group).

sudo chmod 777 /var/run/docker.sock

docker run -d --name sonar -p 9000:9000 sonarqube:lts-community

```
ubuntu@ip-172-31-42-253:~$ sudo chmod 777 /var/run/docker.sock
ubuntu@ip-172-31-42-253:~$ docker run -d --name sonar -p 9000:9000 sonarqube:lts-community
Unable to find image 'sonarqube:lts-community' locally
lts-community: Pulling from library/sonarqube
44ba2882f8eb: Pull complete
2cabec57fa36: Pull complete
c20481384b6a: Pull complete
bf7b17ee74f8: Pull complete
38617faac714: Pull complete
706f20f58f5e: Pull complete
65a29568c257: Pull complete
Digest: sha256:1a118f8ab960d6c3d4ea8b4455a5a6560654511c88a6816f1603f764d5dcc77c
Status: Downloaded newer image for sonarqube:lts-community
4b60c96bf9ad3d62289436af7f752fdb04993092d0ca3065e2f2e32301b50139
ubuntu@ip-172-31-42-253:~$ docker ps
CONTAINER ID   IMAGE                    COMMAND                  CREATED         STATUS         PORTS                                                NAMES
4b60c96bf9ad   sonarqube:lts-community   "/opt/sonarqube/dock…"   9 seconds ago   Up 5 seconds   0.0.0.0:9000->9000/tcp, :::9000->9000/tcp   sonar
ubuntu@ip-172-31-42-253:~$
```

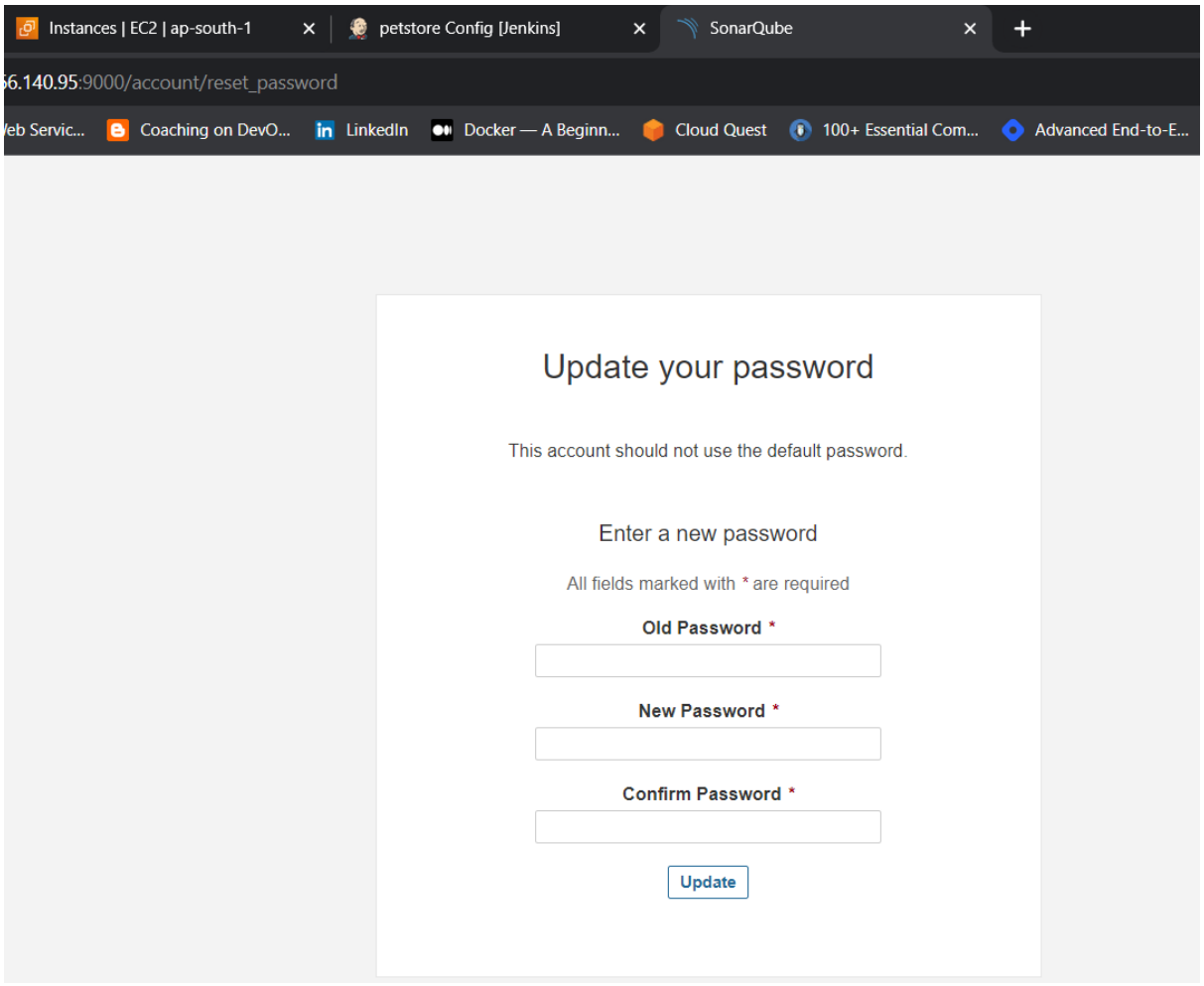
Now our Sonarqube is up and running



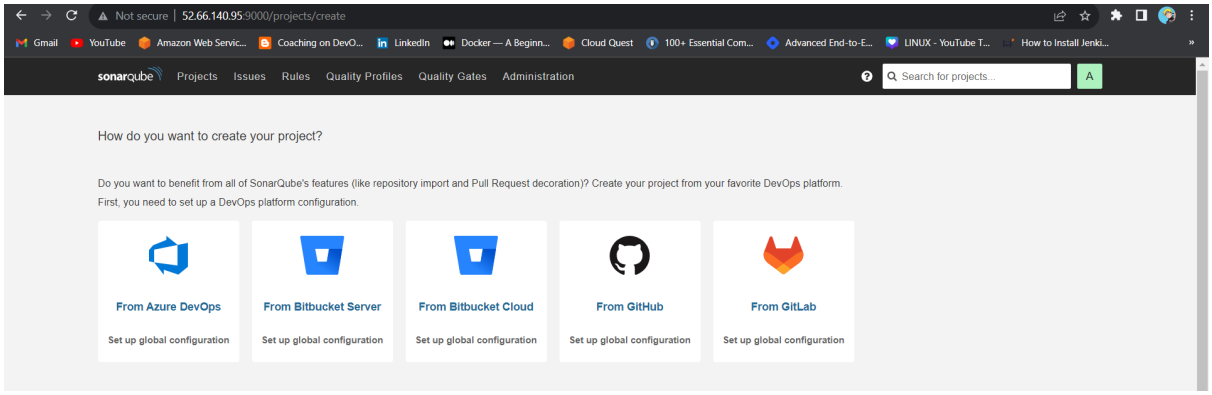
Enter username and password, click on login and change password

username admin

password admin



Update New password, This is Sonar Dashboard.



Install Trivy

vi script.sh

sudo apt-get install wget apt-transport-https gnupg lsb-release -y

wget -qO - https://aquasecurity.github.io/trivy-repo/deb/public.key | gpg --dearmor | sudo tee /usr/share/keyrings/trivy.gpg > /dev/null

echo "deb [signed-by=/usr/share/keyrings/trivy.gpg] https://aquasecurity.github.io/trivy-repo/deb $(lsb_release -sc) main" | sudo tee -a /etc/apt/sources.list.d/trivy.list

sudo apt-get update

sudo apt-get install trivy -y

Give permissions and run script

sudo chmod 777 script.sh

./script.sh

Next, we will log in to Jenkins and start to configure our Pipeline in Jenkins

Install Plugins like JDK, Sonarqube Scanner, NodeJs, OWASP Dependency Check

Install Plugin

Goto Manage Jenkins →Plugins → Available Plugins →

Install below plugins

Blue ocean

1 → Eclipse Temurin Installer

2 → SonarQube Scanner

3 → NodeJs Plugin

4 → Docker

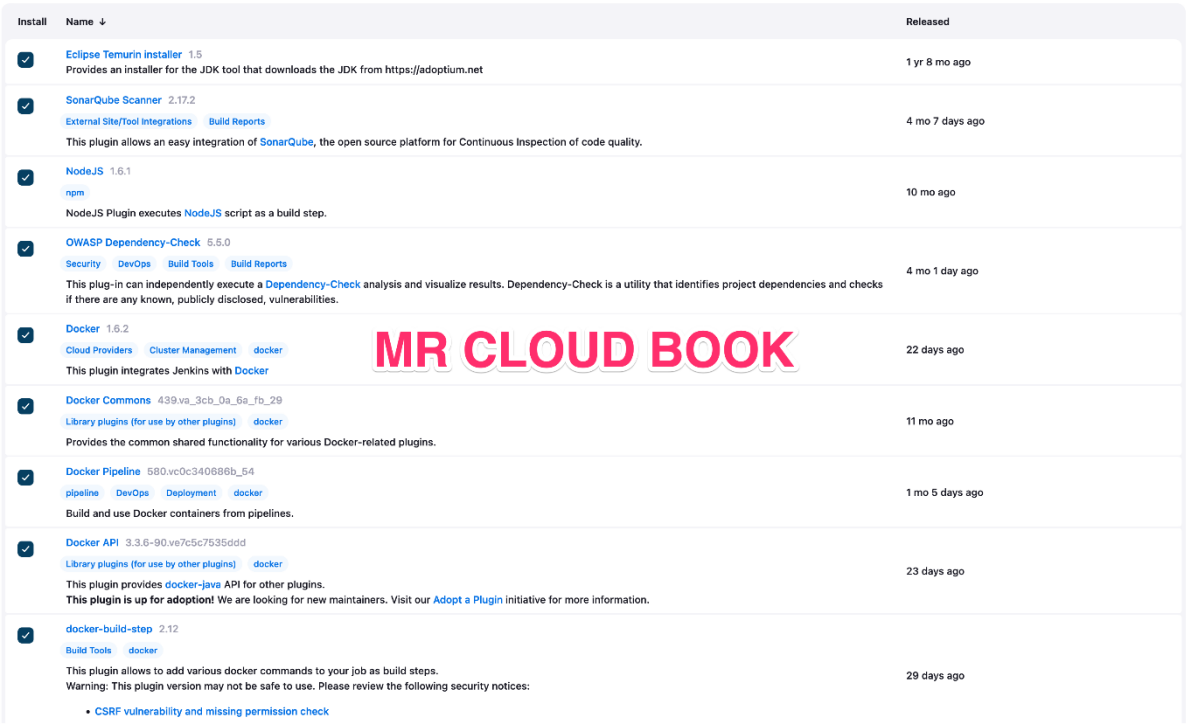
5 → Docker commons

6 → Docker pipeline

7 → Docker API

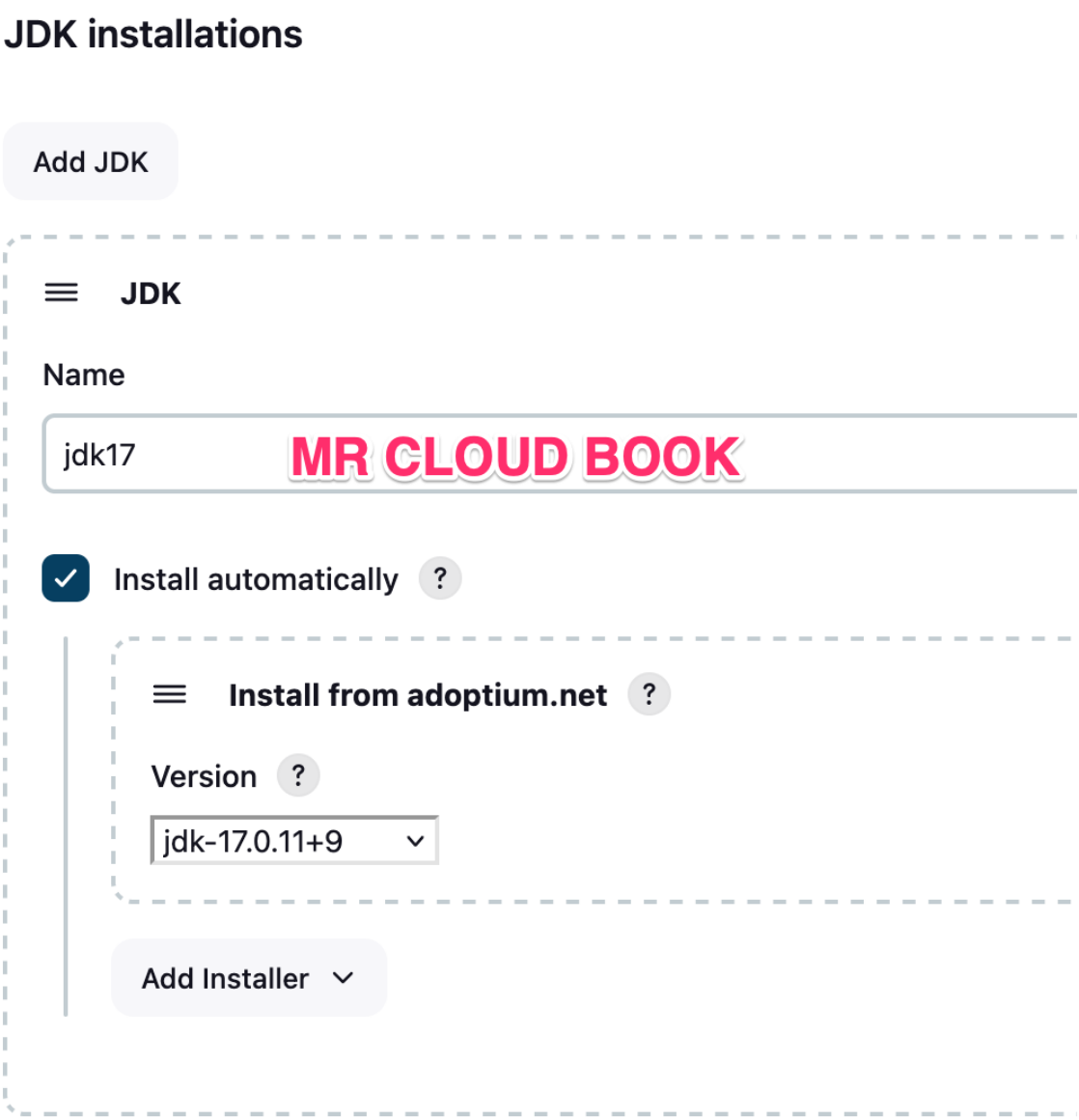
8 → Docker Build step

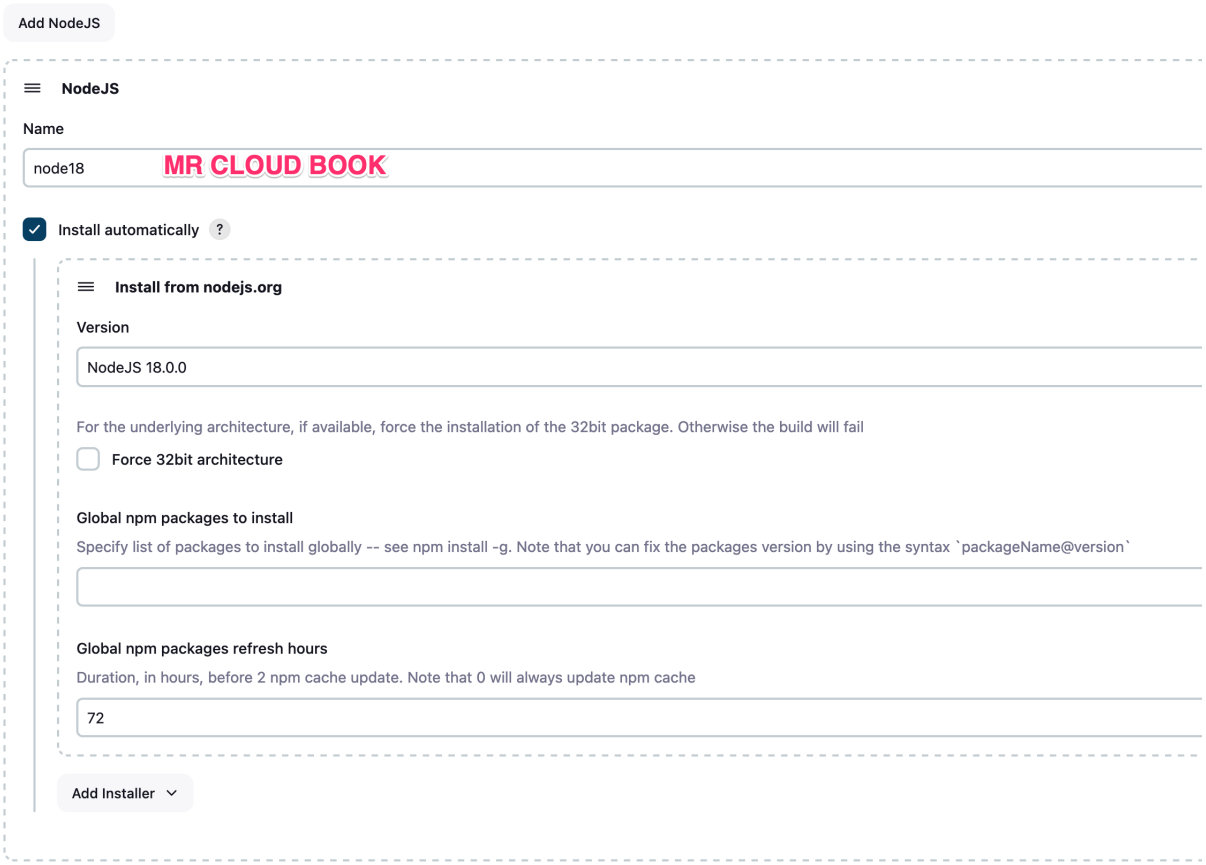
9 → Owasp Dependency Check



Configure Java and Nodejs in Global Tool Configuration

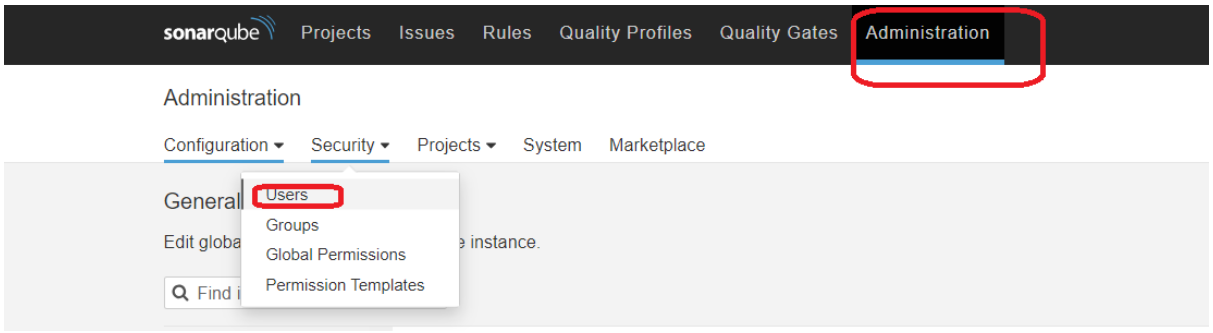
Goto Manage Jenkins → Tools → Install JDK(17) and NodeJs(18)→ Click on Apply and Save


JDK installations
Add JDK
JDK
Name
jdk17
MR CLOUD BOOK
Install automatically
Install from adoptium.net
Version
jdk-17.0.11+9
Add Installer

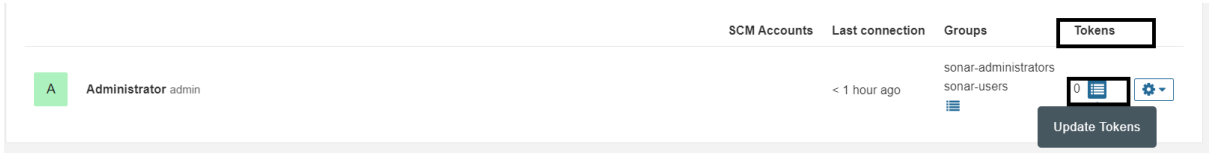


Grab the Public IP Address of your EC2 Instance, Sonarqube works on Port 9000, so <Public IP>:9000. Goto your Sonarqube Server.

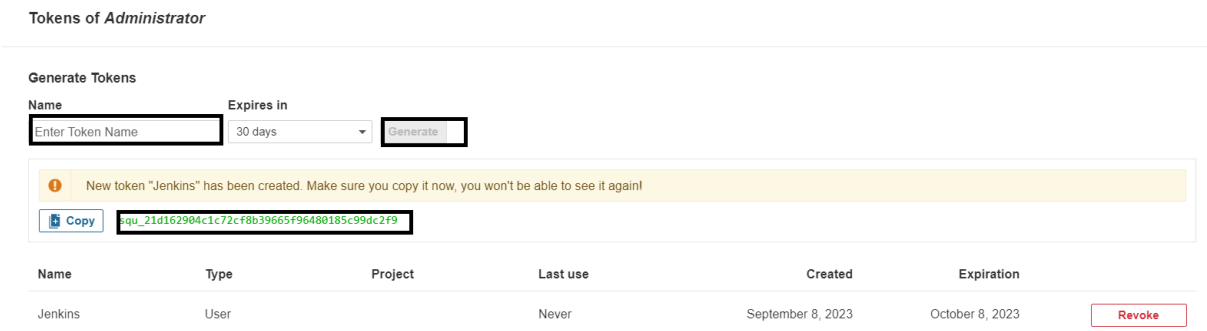
Click on Administration → Security → Users → Click on Tokens and Update Token → Give it a name → and click on Generate Token



click on update Token

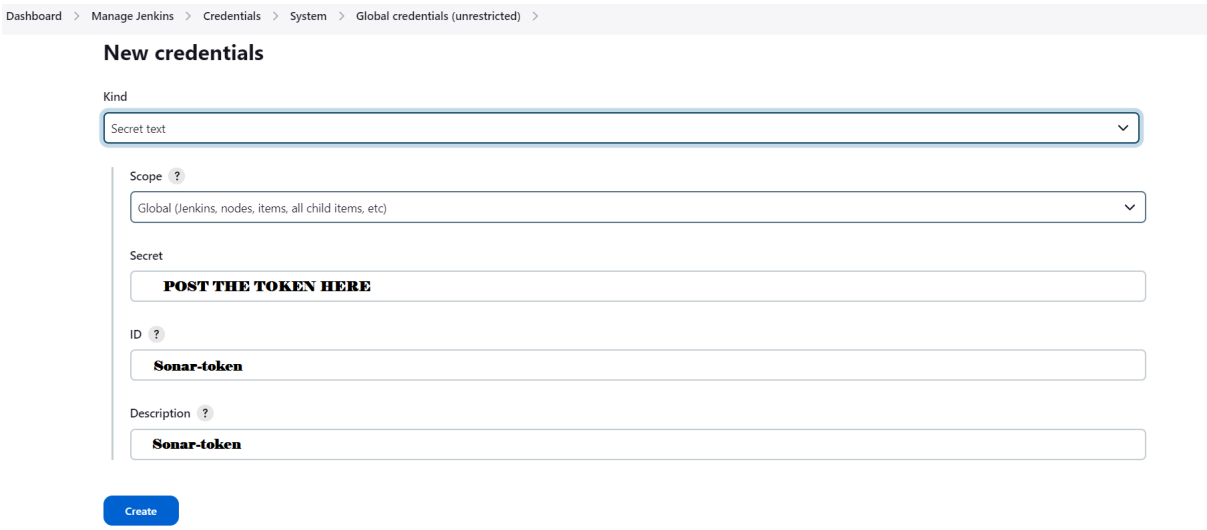


Create a token with a name and generate

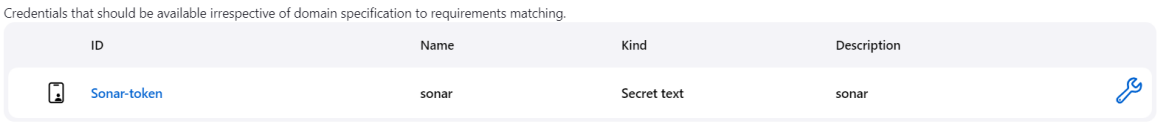


copy Token

Go to Jenkins Dashboard → Manage Jenkins → Credentials → Add Secret Text. It should look like this

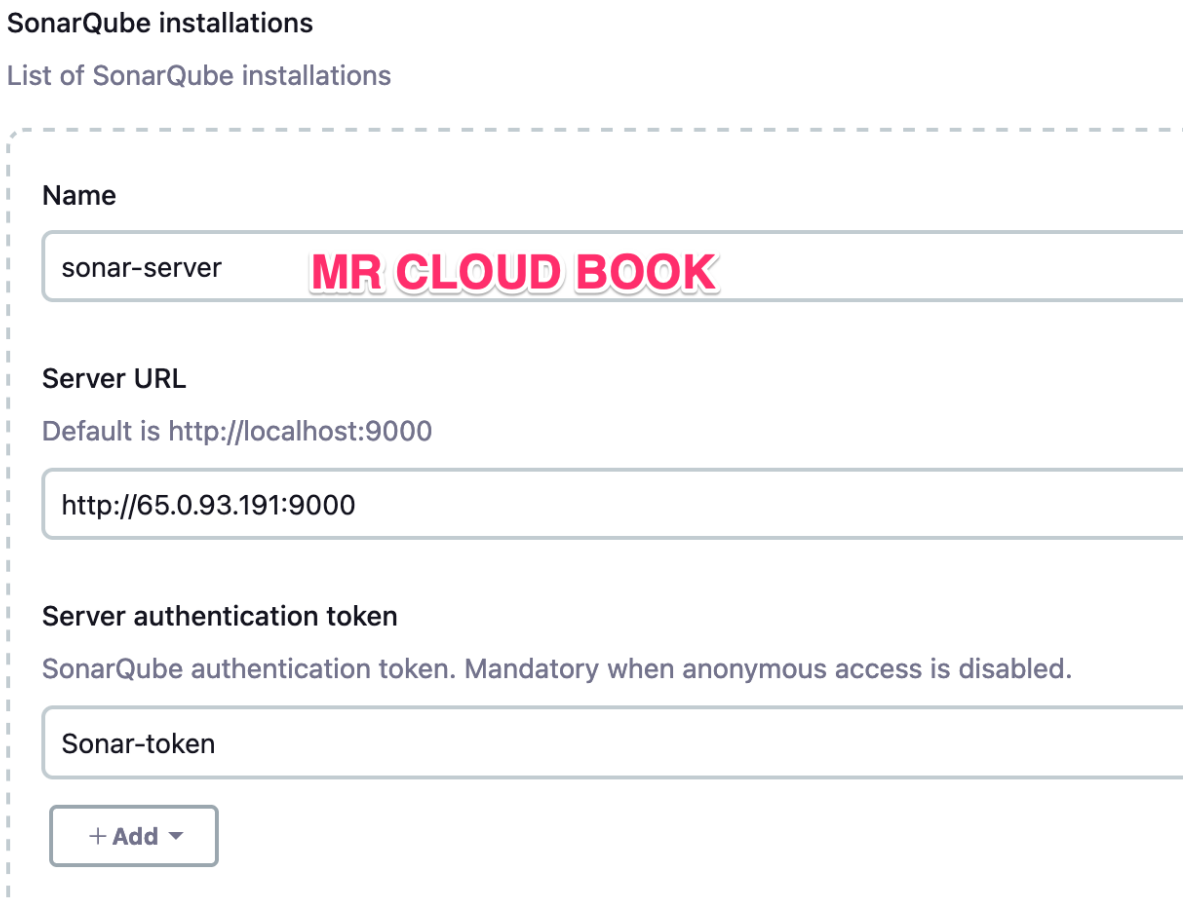


You will this page once you click on create



Now, go to Dashboard → Manage Jenkins → System and Add like the below image.

Search for SonarQube Installation



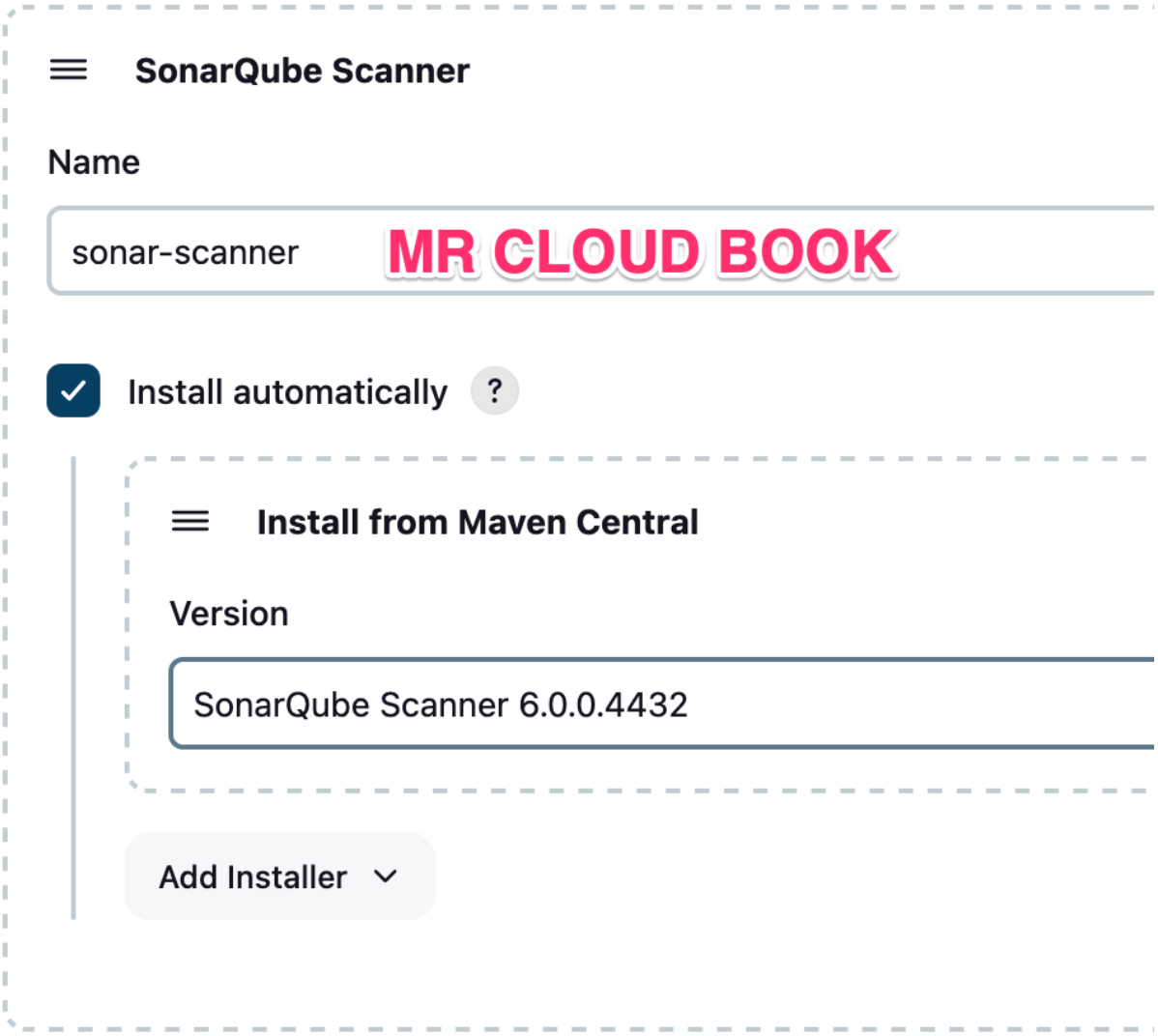
Click on Apply and Save

The Configure System option is used in Jenkins to configure different server

Global Tool Configuration is used to configure different tools that we install using Plugins

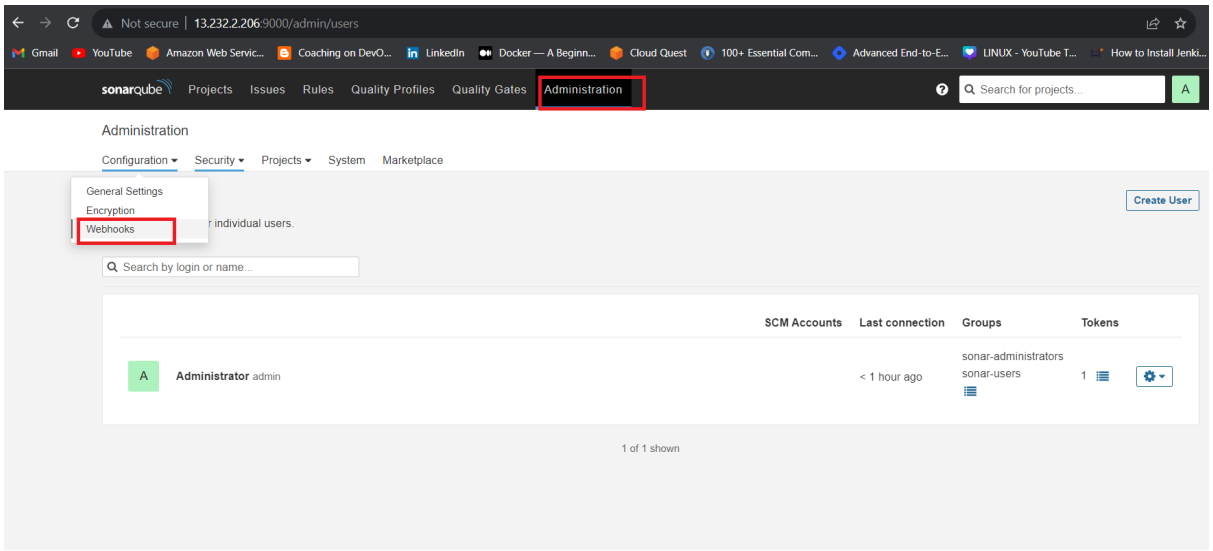
We will install a sonar scanner in the tools.

Manage Jenkins –> Tools –> SonarQube Scanner

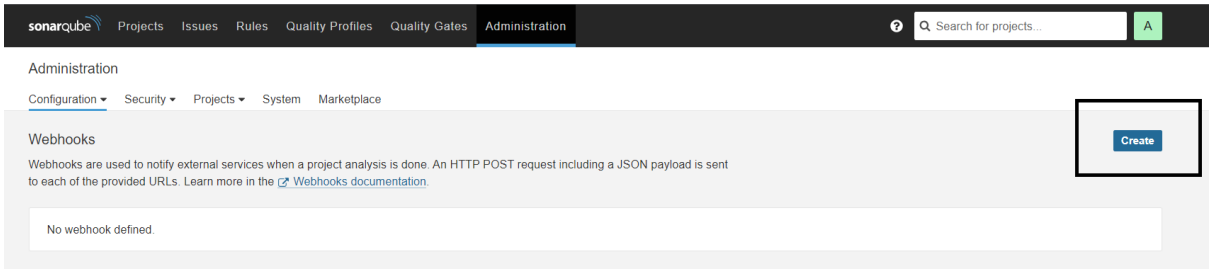


In the Sonarqube Dashboard add a quality gate also

Administration–> Configuration–>Webhooks



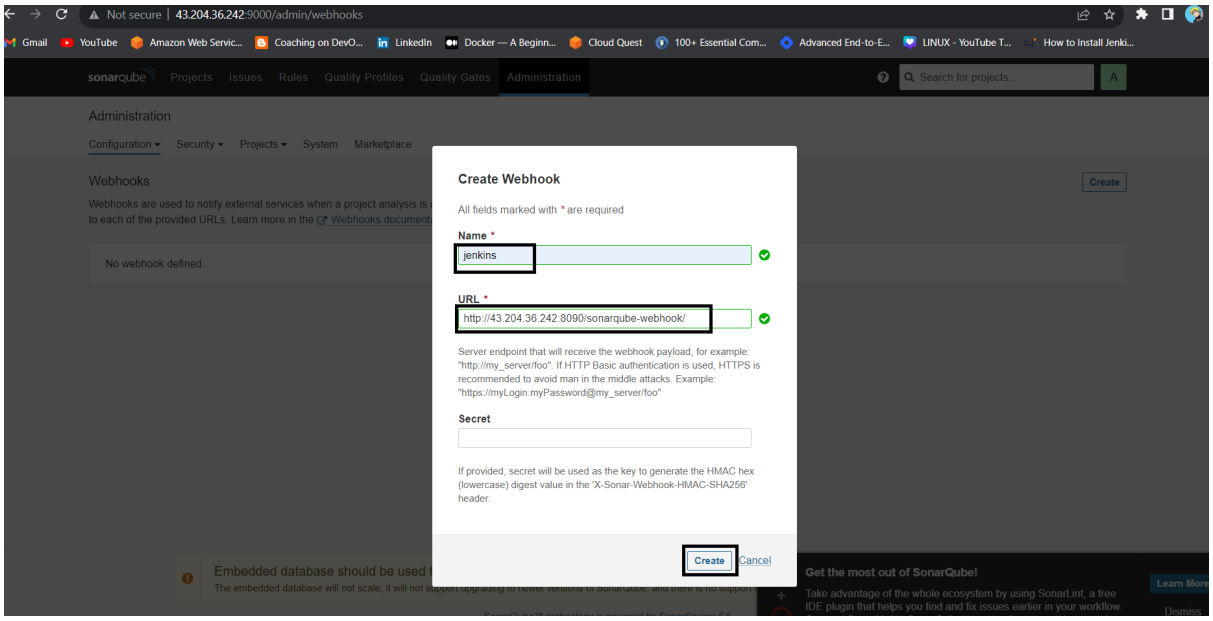
Click on Create



Add details

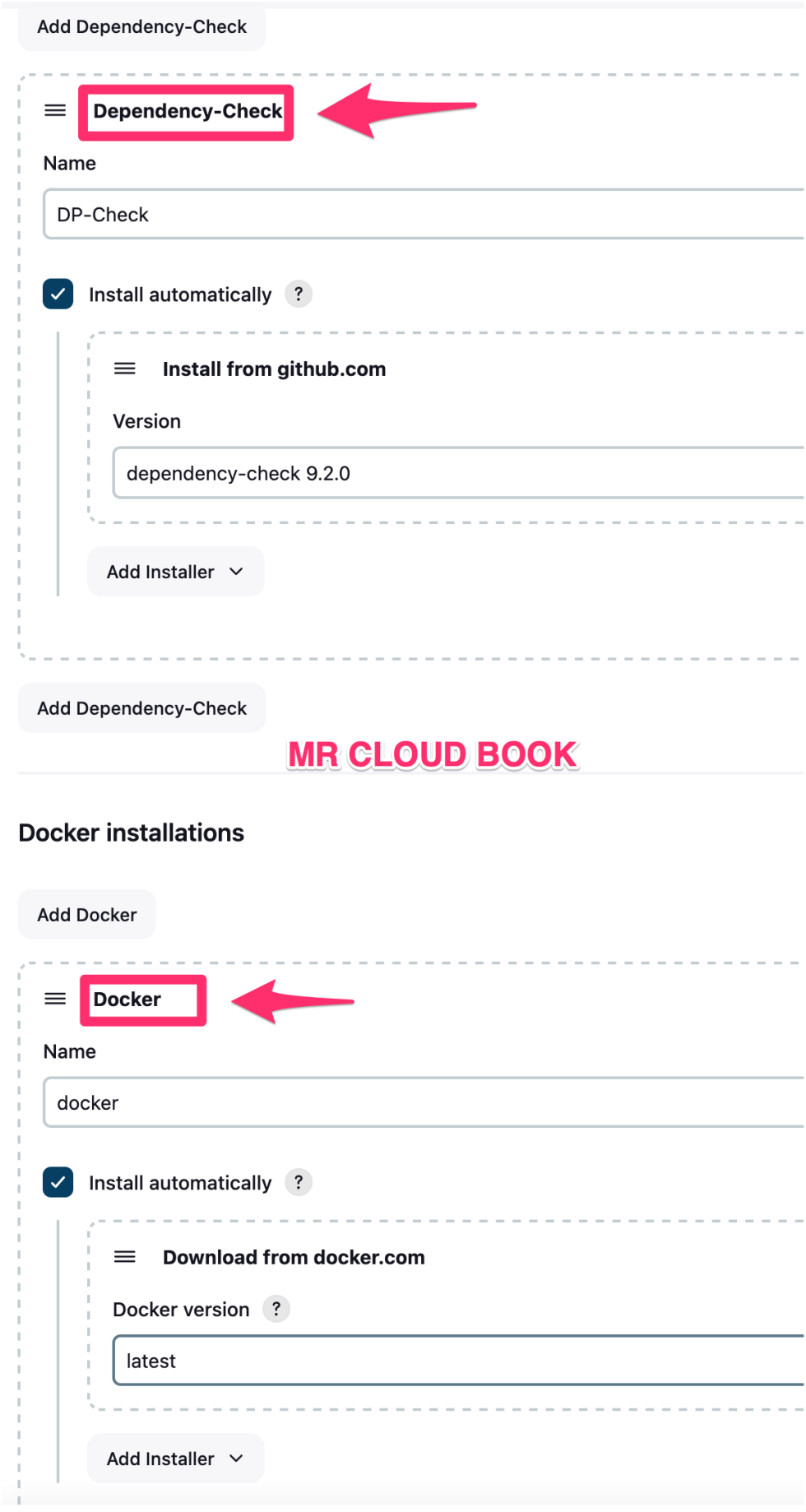
#in url section of quality gate

http://jenkins-public-ip:8080/sonarqube-webhook/



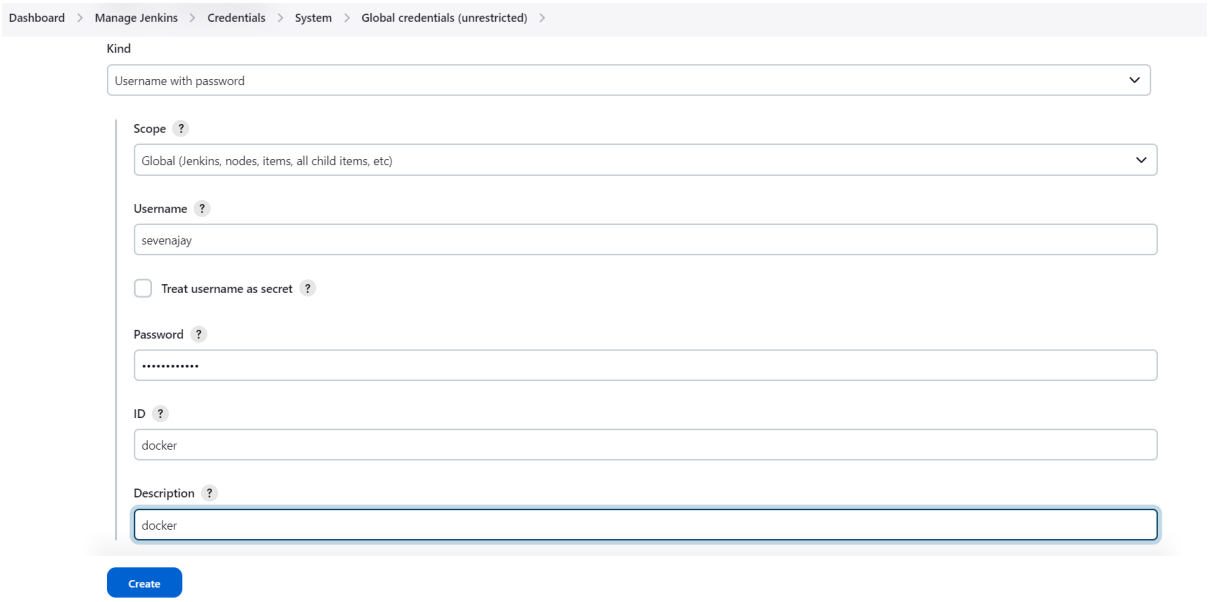
First, we configured the Plugin and next, we had to configure the Tool

Goto Dashboard → Manage Jenkins → Tools →Dependency-Check & Docker


Add Dependency-Check
Dependency-Check
Name
DP-Check
Install automatically
Install from github.com
Version
dependency-check 9.2.0
Add Installer
Add Dependency-Check
MR CLOUD BOOK
Docker installations
Add Docker
Docker
Name
docker
Install automatically
Download from docker.com
Docker version
latest
Add Installer

Go to manage Jenkins –> Credentials

Add DockerHub Username and Password under Global Credentials



Create Job for Uptime-kuma

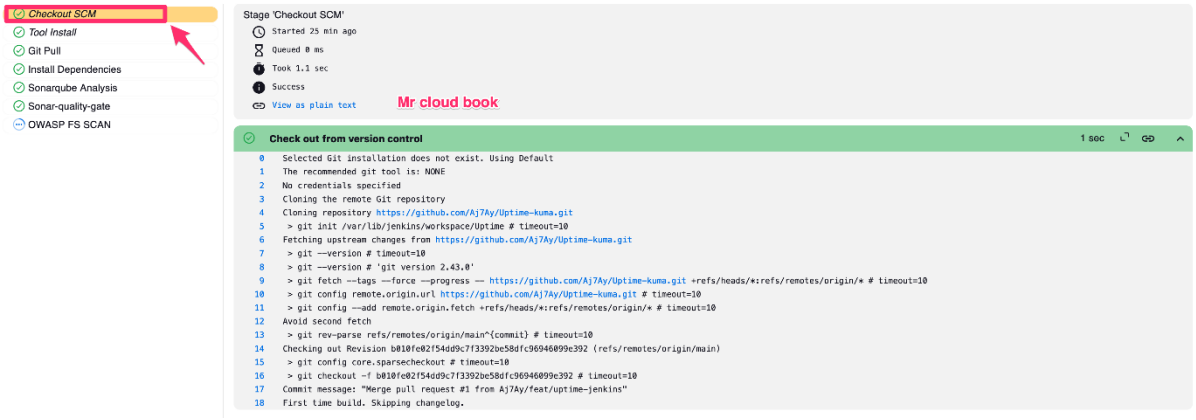
Add this stage to Pipeline Script

```
pipeline{
    agent any
    tools{
        jdk 'jdk17'
        nodejs 'node18'
    }
    environment {
        SCANNER_HOME=tool 'sonar-scanner'
    }
    stages {
        stage('Checkout from Git'){
            steps{
                git branch: 'main', url: 'https://github.com/Aj7Ay/uptime.git'
            }
        }
        stage('Install Dependencies') {
            steps {
```

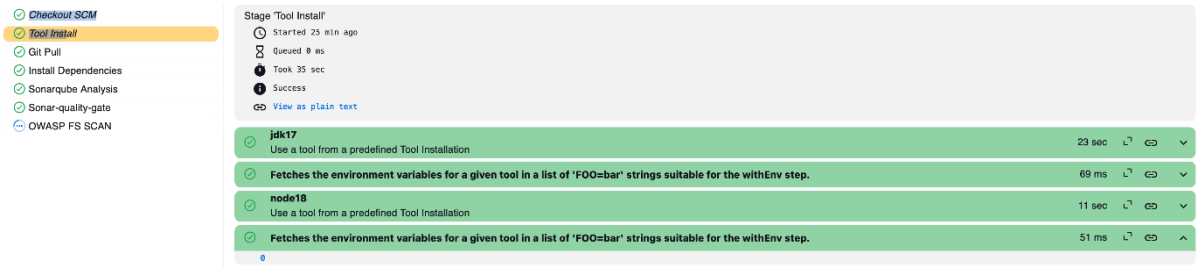
```
            sh "npm install"
        }
    }
    stage("Sonarqube Analysis "){
        steps{
            withSonarQubeEnv('sonar-server') {
                sh ''' $SCANNER_HOME/bin/sonar-scanner -Dsonar.projectName=uptime \
                -Dsonar.projectKey=uptime '''
            }
        }
    }
    stage("quality gate"){
       steps {
            script {
                waitForQualityGate abortPipeline: false, credentialsId: 'Sonar-token'
            }
        }
    }
    stage('OWASP FS SCAN') {
        steps {
            dependencyCheck additionalArguments: '--scan ./ --disableYarnAudit --disableNodeAudit',
odcInstallation: 'DP-Check'
            dependencyCheckPublisher pattern: '**/dependency-check-report.xml'
        }
    }
    stage('TRIVY FS SCAN') {
        steps {
            sh "trivy fs . &gt; trivyfs.json"
        }
    }
    stage("Docker Build &amp; Push"){
```

```
        steps{
            script{
                withDockerRegistry(credentialsId: 'docker', toolName: 'docker'){
                    sh "docker build -t uptime ."
                    sh "docker tag uptime sevenajay/uptime:latest "
                    sh "docker push sevenajay/uptime:latest "
                }
            }
        }
    }
    stage("TRIVY"){
        steps{
            sh "trivy image sevenajay/uptime:latest &gt; trivy.json"
        }
    }
    stage ("Remove container") {
        steps{
            sh "docker stop uptime | true"
            sh "docker rm uptime | true"
        }
    }
    stage('Deploy to container'){
        steps{
            sh 'docker run -d --name chatbot -v /var/run/docker.sock:/var/run/docker.sock -p 3001:3001
sevenajay/uptime:latest'
        }
    }
  }
```

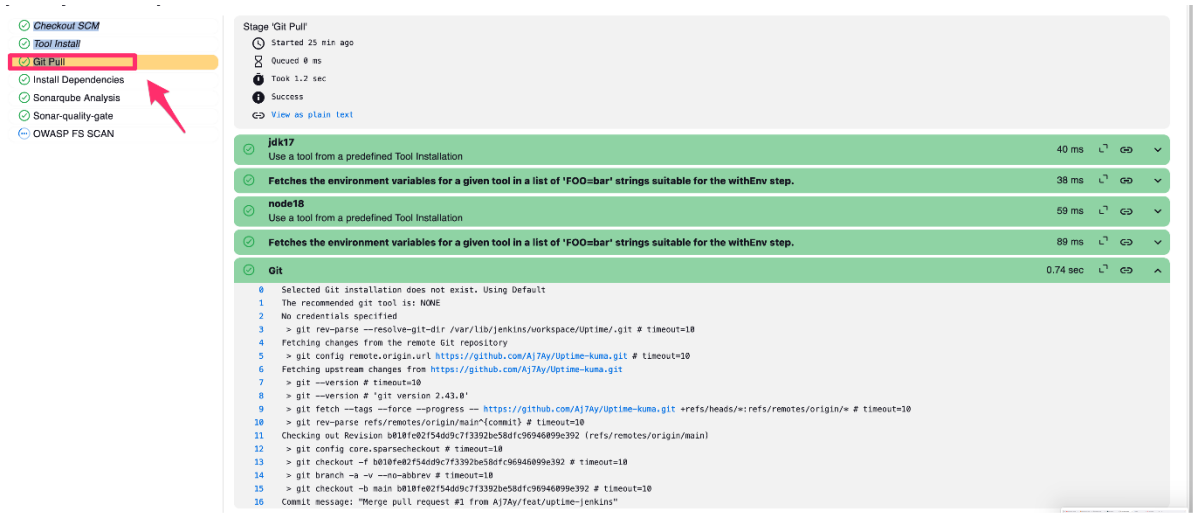
Git checkout



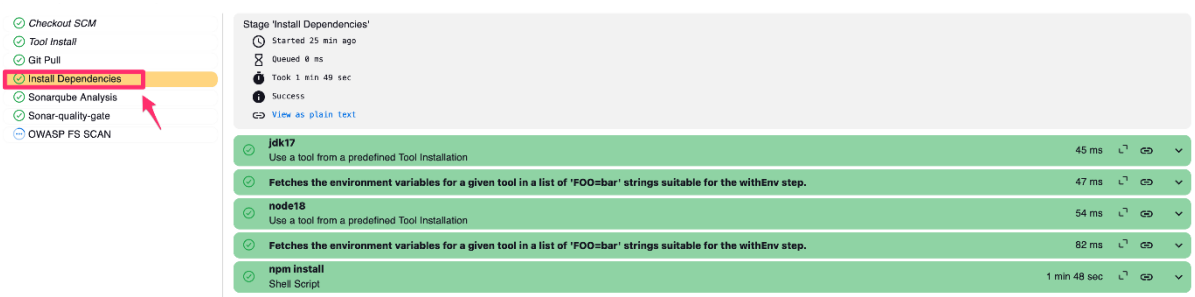
Tool install



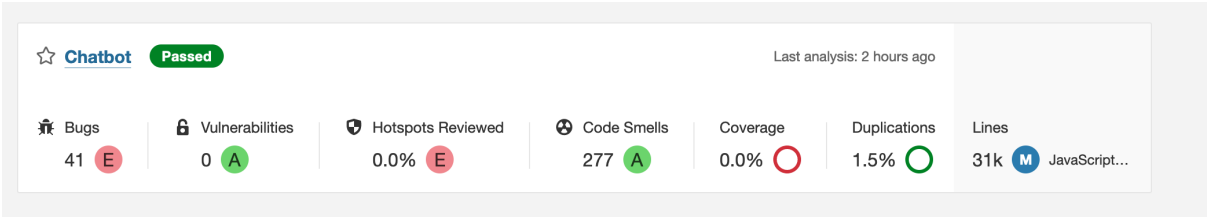
Git pull



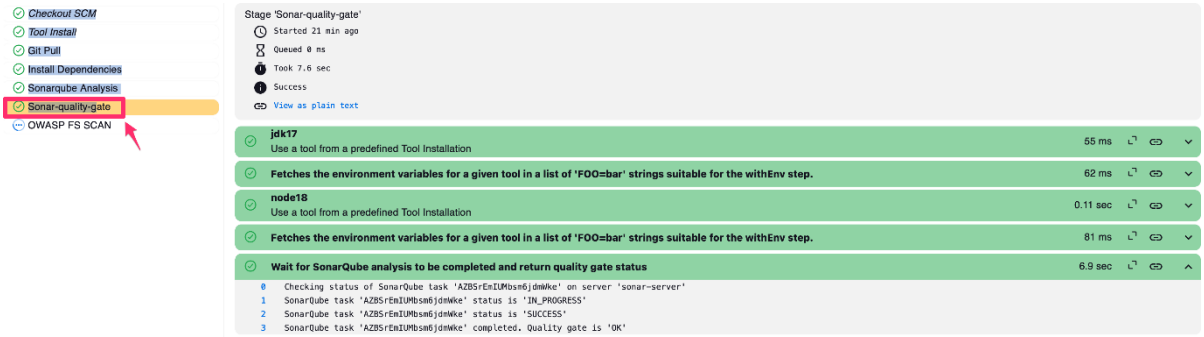
NPM install



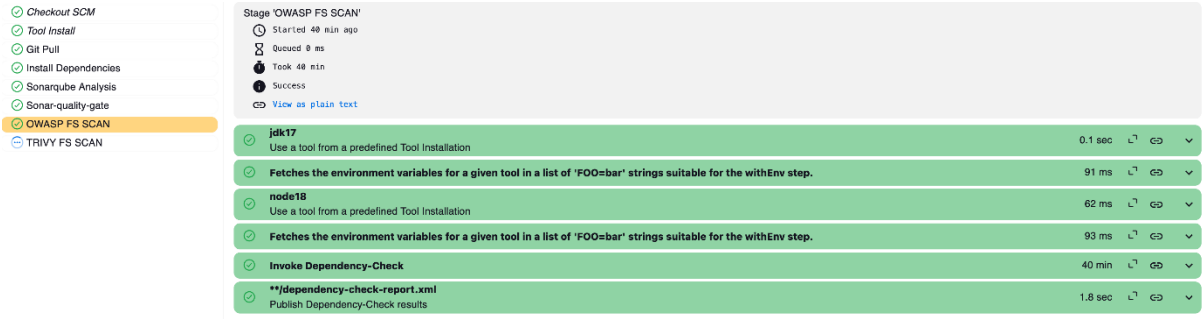
Sonarqube analysis



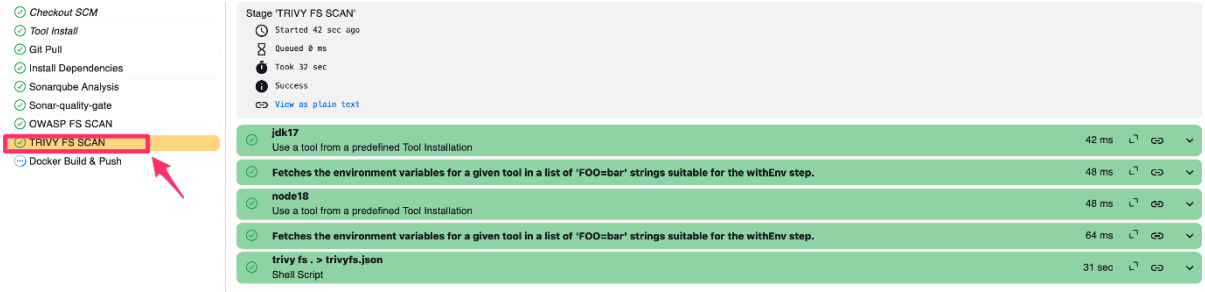
Quality Gate



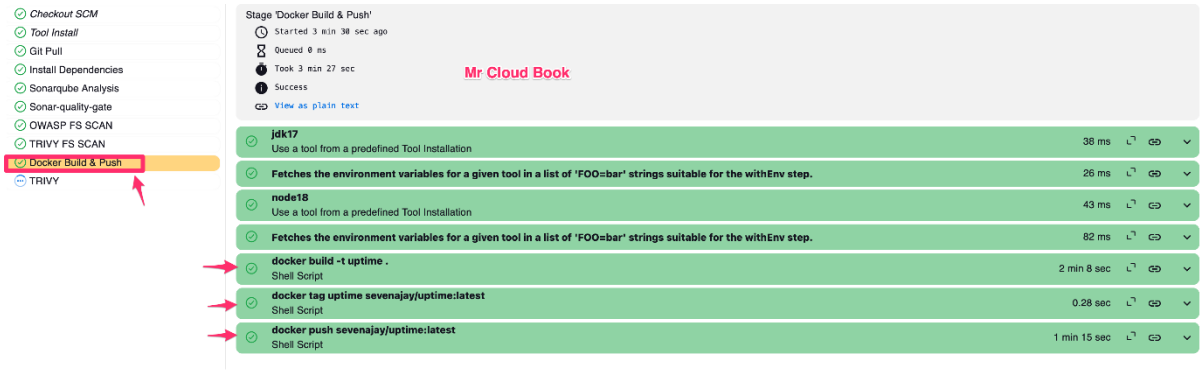
Owasp



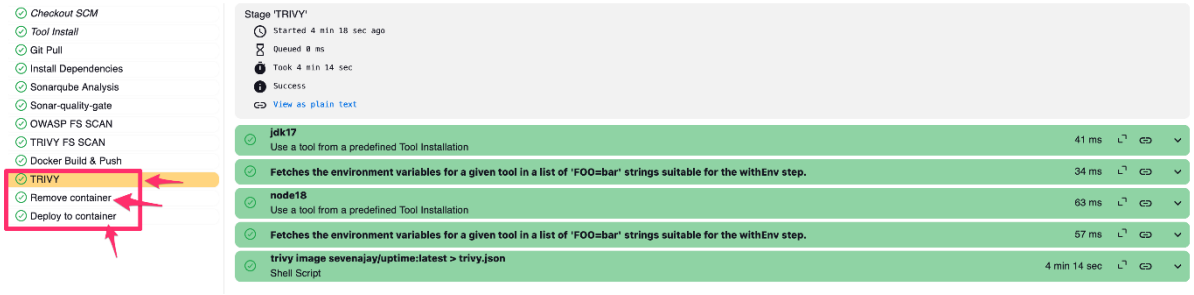
Trivy FS



Docker Build and push



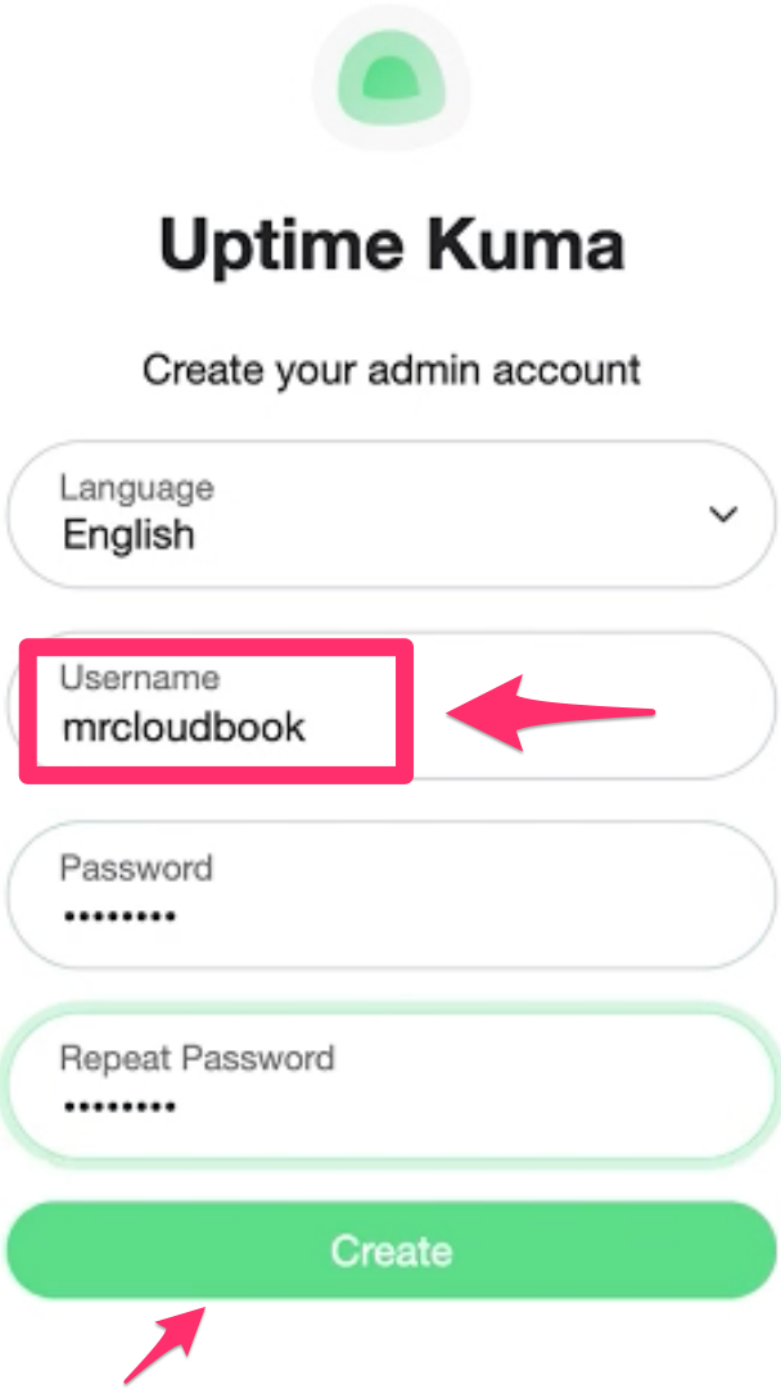
Trivy Image scan and deploy to Docker



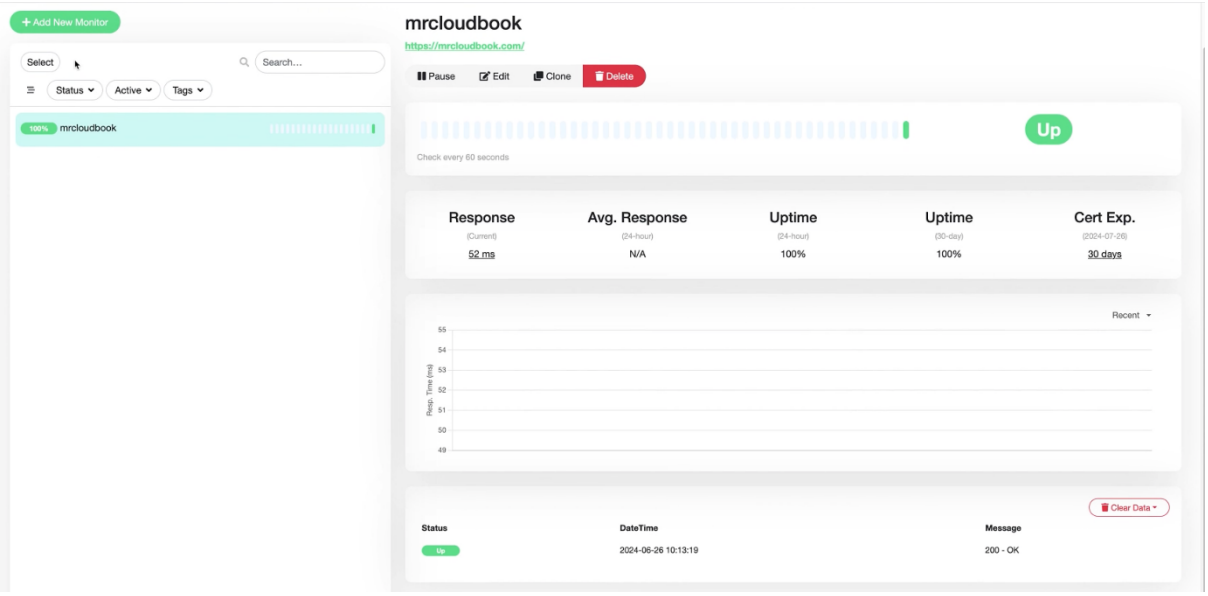
Copy the Public of Server

public-ip>:30001

Output Login Page


Uptime Kuma
Create your admin account
Language
English
Username
mrcloudbook
Password
Repeat Password
Create

Output



Twilio webhook setup

Clone the Github Repo

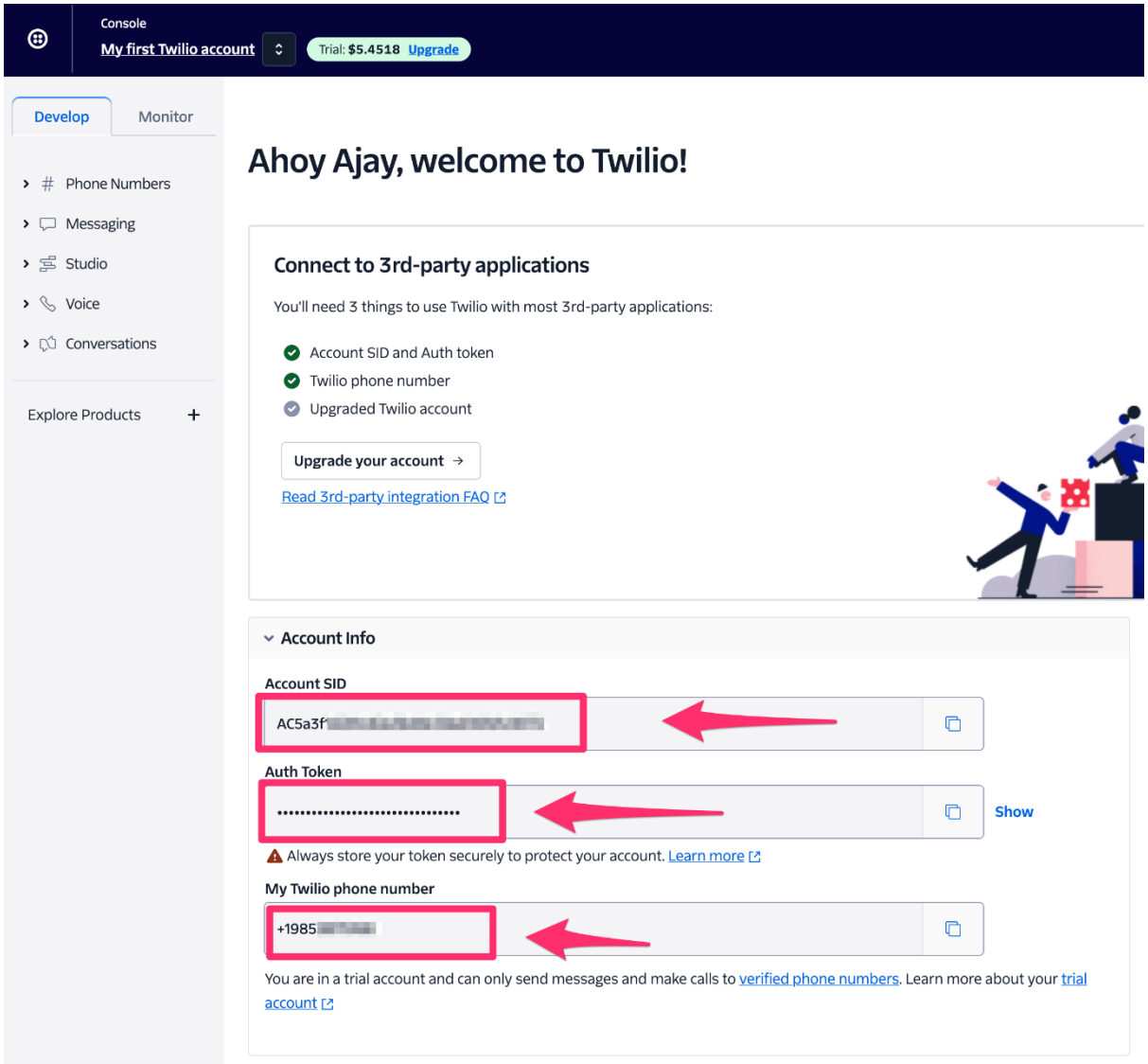
git clone https://github.com/Aj7Ay/Uptime-kuma.git

cd Uptime-kuma

cd Webhook

Create an Twilio Account From [Here]

Go to Console
copy Account SID & Account Auth Token and Mobile Number



Update the app.py

```
from flask import Flask
from twilio.rest import Client


app = Flask(__name__)


@app.route('/trigger-calls', methods=['GET', 'POST'])
def trigger_call():
    account_sid = '&lt;acc-sid&gt;'
    auth_token = '&lt;acc-auth&gt;'
    client = Client(account_sid, auth_token)
```

```
    # List of numbers to call
    numbers_to_call = ['&lt;country-code-number&gt;', '&lt;country-code-number&gt;']
    call_sid = []  # To store Call SIDs

    for number in numbers_to_call:
        call = client.calls.create(
                        twim='&lt;Response&gt;&lt;Say&gt;"change Alert message
here"&lt;/Say&gt;&lt;/Response&gt;',
                        to=number,
                        from_='&lt;twilio-number&gt;'
                    )
        call_sids.append(call.sid)

    # Joining all the Call SIDs to return in response
    call_sids_str = ', 'join(call_sids)
    return f"Call initiated with SIDs: {call_sids_str}", 200

if __name__ == '__main__':
    app.run(host'0.0.0.0', port=5000)
```

Now install These on Server

```
sudo apt install python3-pip
sudo apt install python3.12-venv
python3 -m venv venv
source venv/bin/activate
```

Now install Requirements

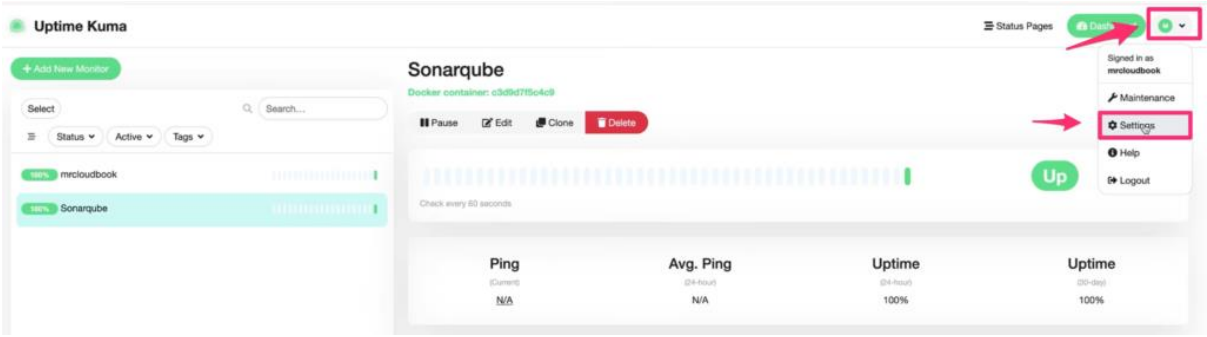
```
pip install -r requirements.txt
```

Create the Docker webhook

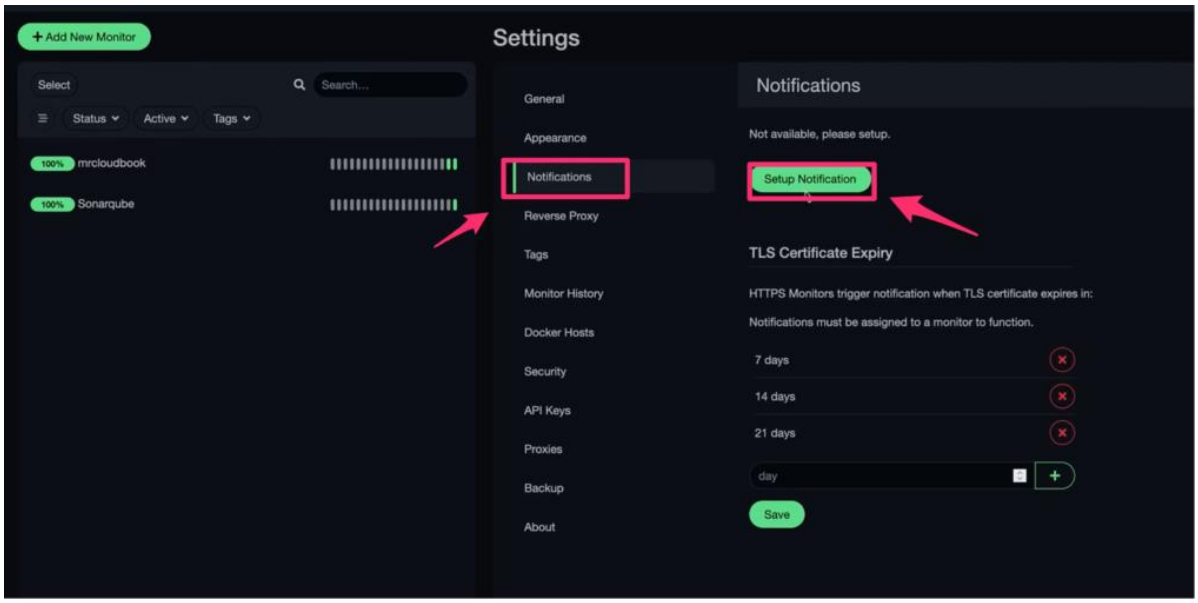
```
cd Uptime-kuma/webhook
docker build -t webhook .
docker run -d --name webhook -p 5000:5000 webhook:latest
```

webhook runs on 5000 port

Go to Uptime Kuma select Profile –> Settings

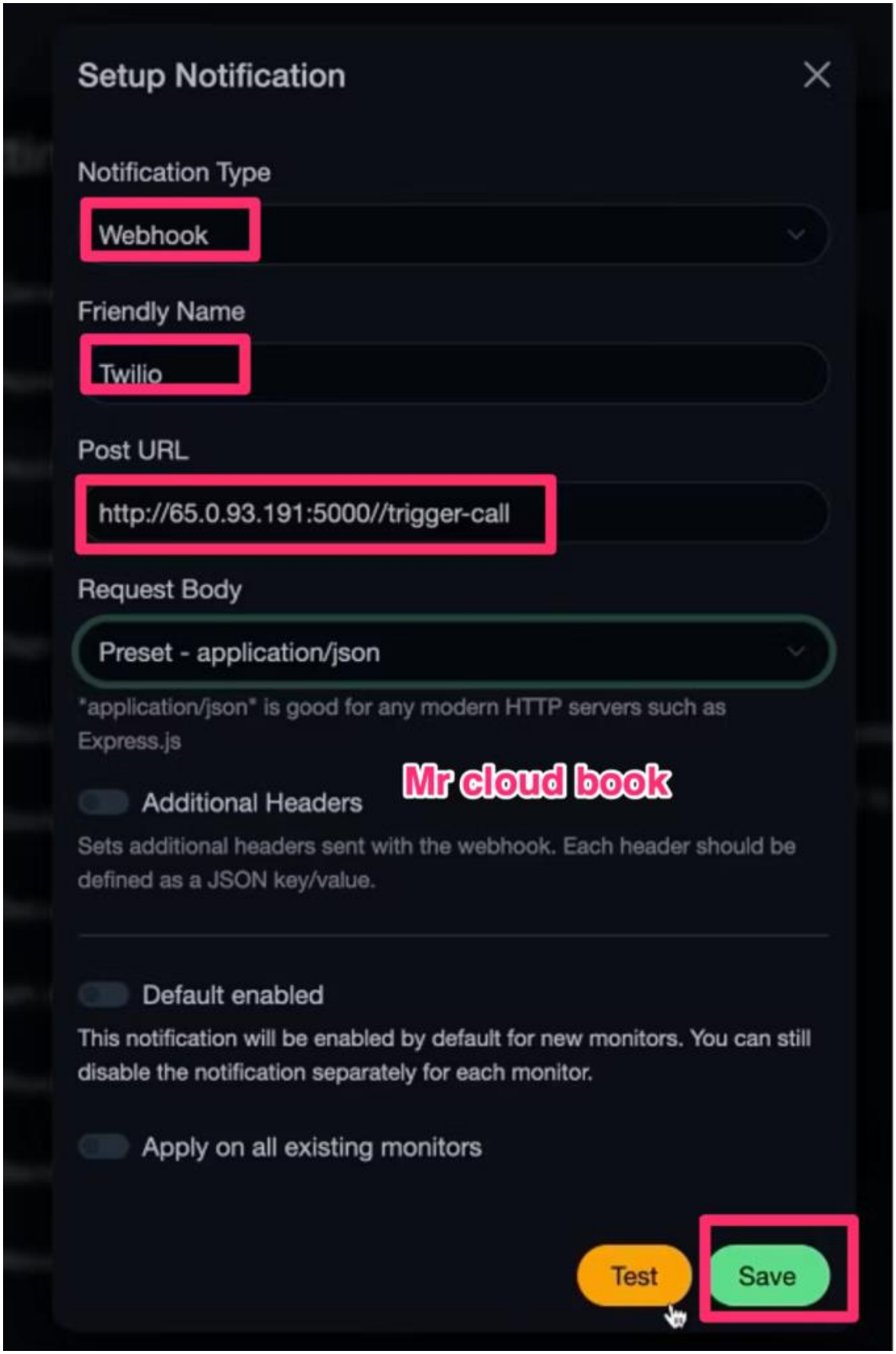


Select Notification –> setup Notification

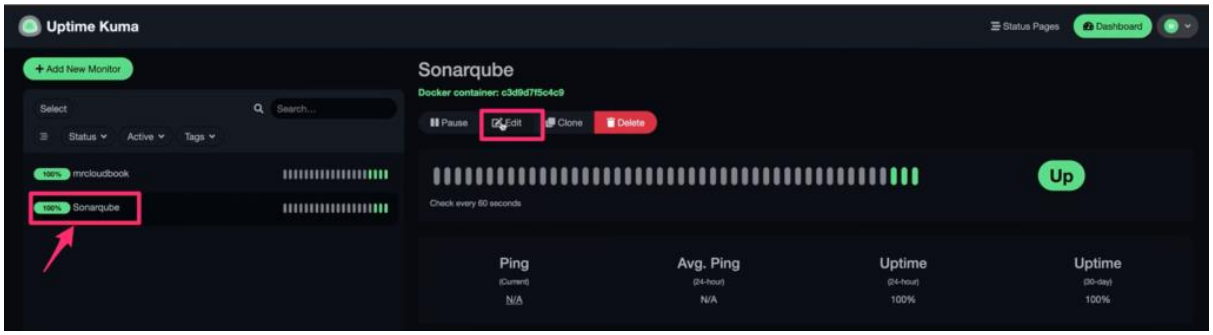


Select Notification Type as webhook

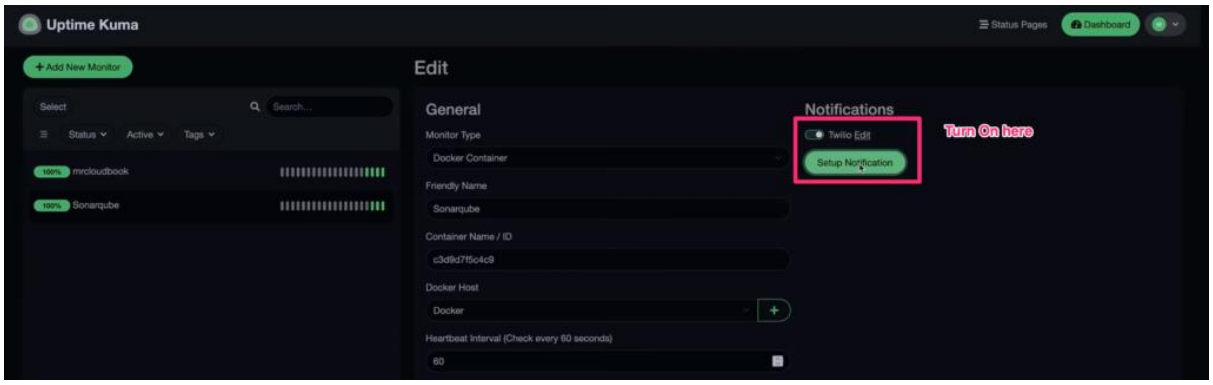
Give Friendly name –> URL of webhook –> save



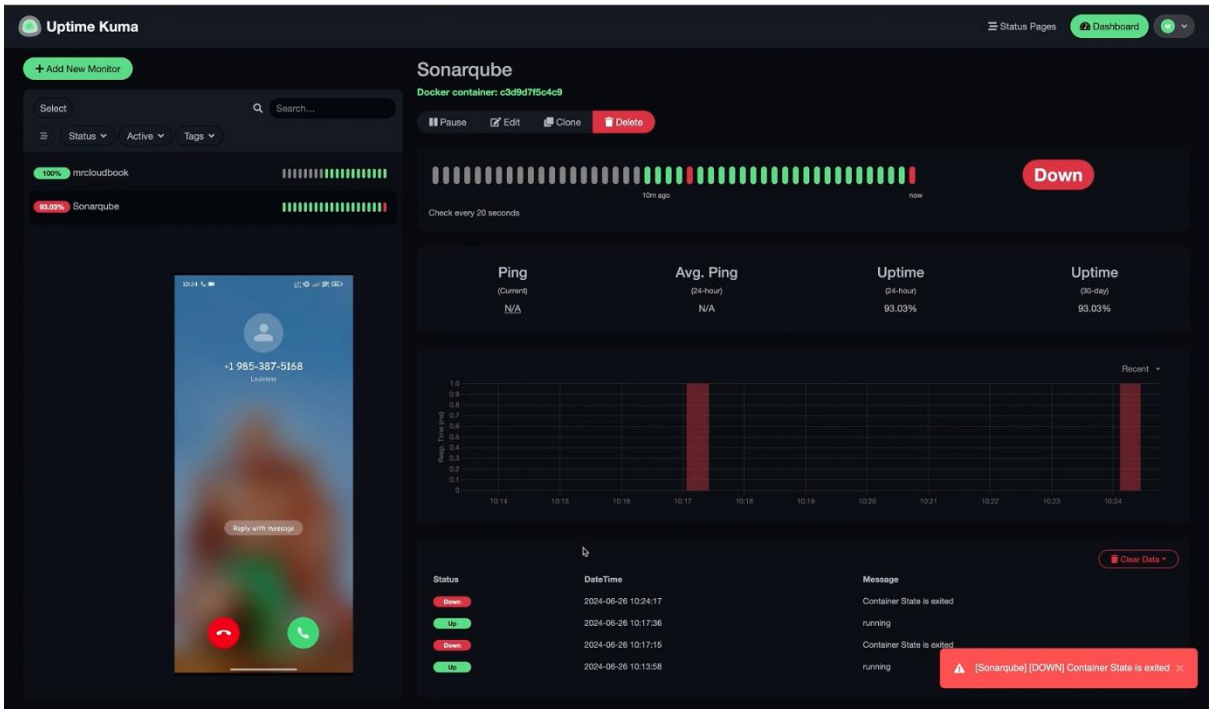
Select One service from Dashboard –> Edit



Turn on Notification to get call



You will get call when server or service Down



Remove Server at end.