**Install and configure SonarQube on AWS EC2 Ubuntu 22.04**

SonarQube is a code quality assurance tool used for continuous inspection of code quality to perform automatic reviews with analysis of code to detect bugs and code smells on multiple programming languages and generate an analysis report to ensure code reliability.



## **Let's start the installation of the latest version (10.0) of SonarQube on Ubuntu 22.04 LTS.**

***Note:****The same steps also work on the AWS EC2 Ubuntu 20.04.*

***Server Specification (Please choose as per your requirement):***

OS = Ubuntu 22.04 LTS

CPU: 2 vCPU

RAM: 4 GB

Storage: 20 GB

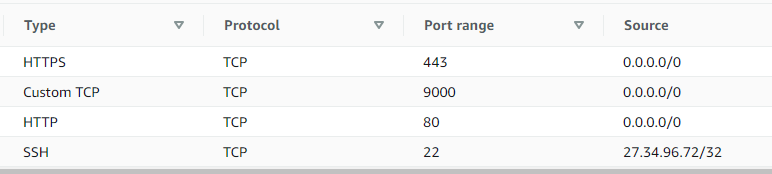
***Security Ports to open for the AWS EC2 server:***

i) HTTP = 80

ii) HTTPS = 443

iii) SSH = 22 (open to only required IP)

iv) Custom port = 9000



## **1) SSH into the AWS EC2 Ubuntu Server**

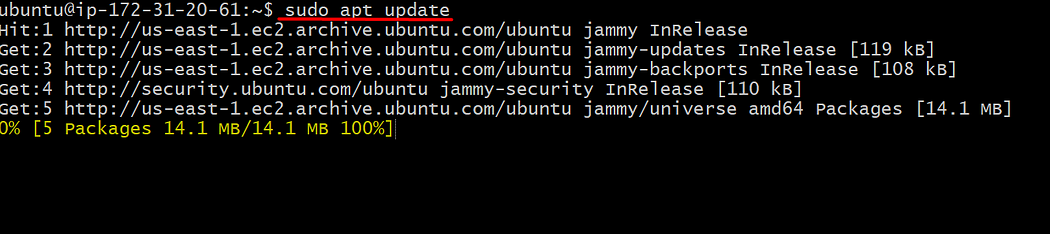
ssh -i [keyname.pem] [OSname]@[PublicIP\_of\_EC2Server]

**For example (for me its):**

ssh -i helloworld.pem ubuntu@55.63.86.254

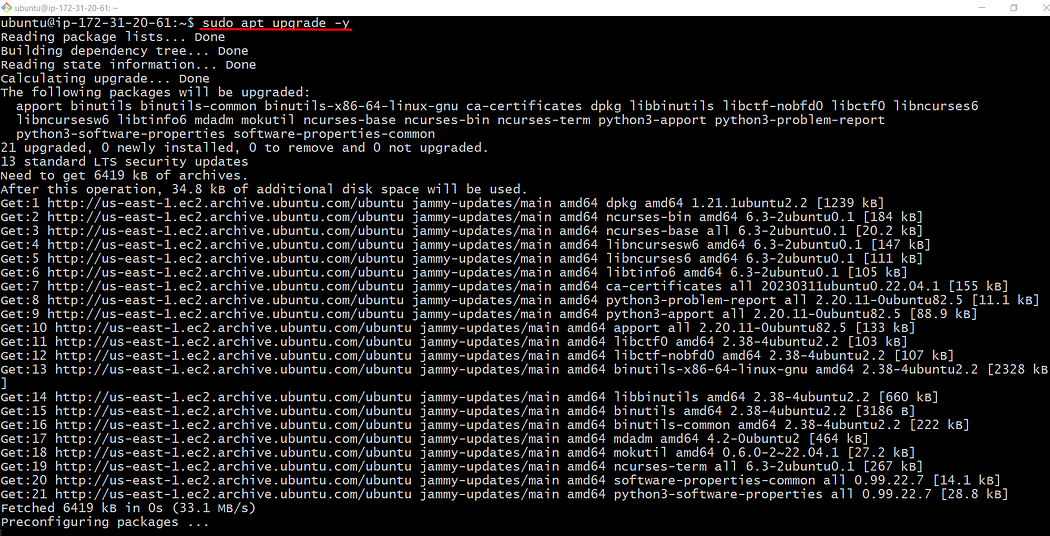
## **2) Let's rejuvenate our Ubuntu server**

sudo apt update



Update the server

sudo apt upgrade -y

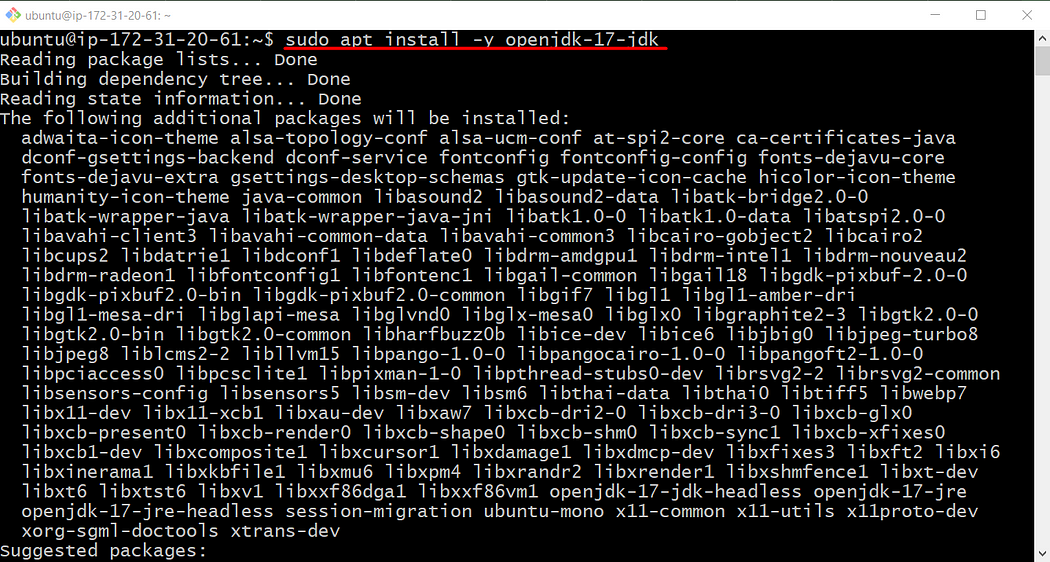


Upgrade the server

## **3) Install OpenJDK 17**

**i)** Install OpenJDK 17 (needed for the latest version of SonarQube (version 10.0).

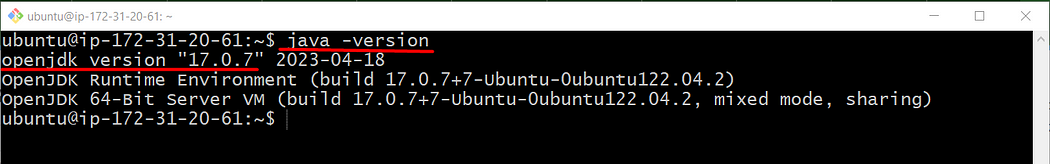
sudo apt install -y openjdk-17-jdk



Installing JDK 17

**ii)** Let's check the installed version of Java. **VALIDATION IS IMPORTANT.**

java -version

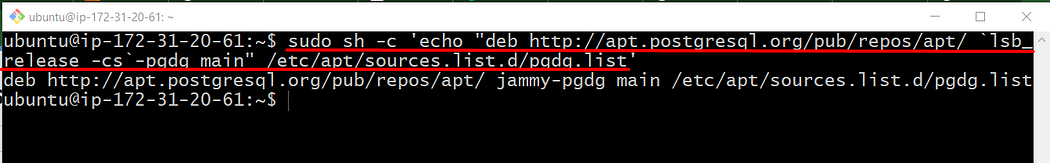


Checking the Java version

## **4) Install and Configure PostgreSQL**

**i)** Add the PostgreSQL repository.

sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt/ `lsb\_release -cs`-pgdg main" /etc/apt/sources.list.d/pgdg.list'

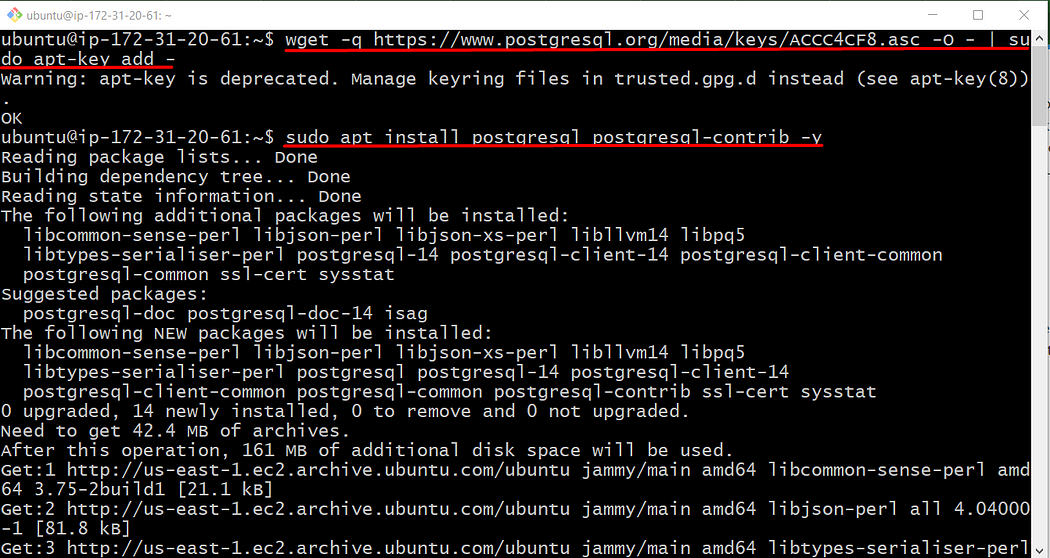


**ii)** Add the PostgreSQL signing key.

wget -q https://www.postgresql.org/media/keys/ACCC4CF8.asc -O - | sudo apt-key add -

**iii)** Install PostgreSQL.

sudo apt install postgresql postgresql-contrib -y



Installing PostgreSQL and its dependencies

**iv)** Enable the database server to start automatically on reboot.

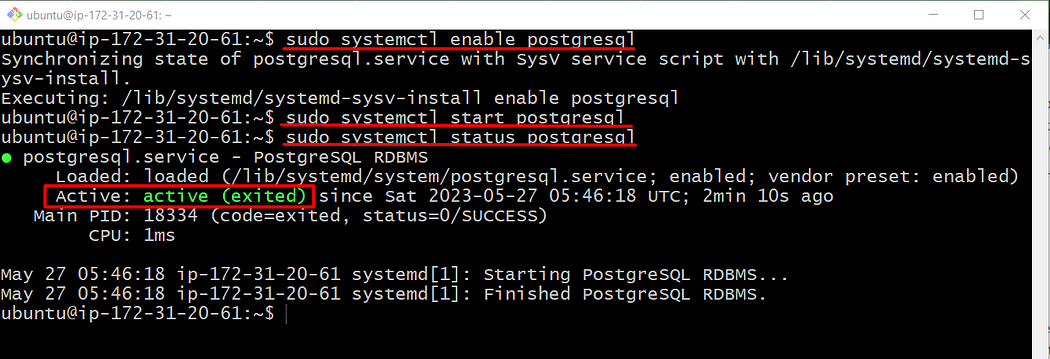
sudo systemctl enable postgresql

**v)** Start the database server.

sudo systemctl start postgresql

**vi)** Check the status of the database server

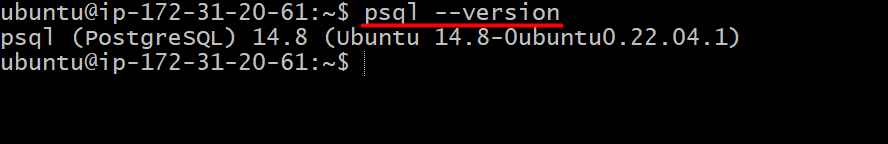
sudo systemctl status postgresql



Postgresql status check

**vii)** Let’s check the installed version of the install Postgres DB. **VALIDATION IS IMPORTANT.**

psql --version



Postgresql version check

**viii)** Switch to the Postgres user.

sudo -i -u postgres

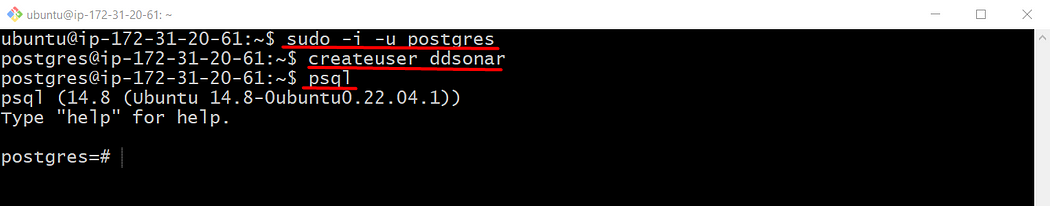
**ix)** Create a database user named **ddsonar.**

***Note:****You can provide the name of your own but make a note of it, as we will be needing this name in further steps.*

createuser ddsonar

**x)** Log in to PostgreSQL.

psql



SSH into the Postgresql

**xi)** Set a password for the **ddsonar** user. Use a strong password in place of my\_strong\_password.

ALTER USER [Created\_user\_name] WITH ENCRYPTED password 'my\_strong\_password';

**For example (In my case it will be):**

ALTER USER ddsonar WITH ENCRYPTED password 'mwd#2%#!!#%rgs';

**xii)** Create a SonarQube database and set the owner to ddsonar.

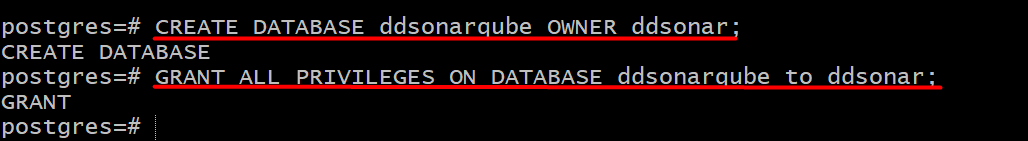
CREATE DATABASE [database\_name] OWNER [Created\_user\_name];

**For example (In our case it will be)**— feel free to give an awesome database name as per your requirement:

CREATE DATABASE ddsonarqube OWNER ddsonar;

**xiii)**Grant all the privileges on the **ddsonarqube** database to the **ddsonar** user.

GRANT ALL PRIVILEGES ON DATABASE ddsonarqube to ddsonar;

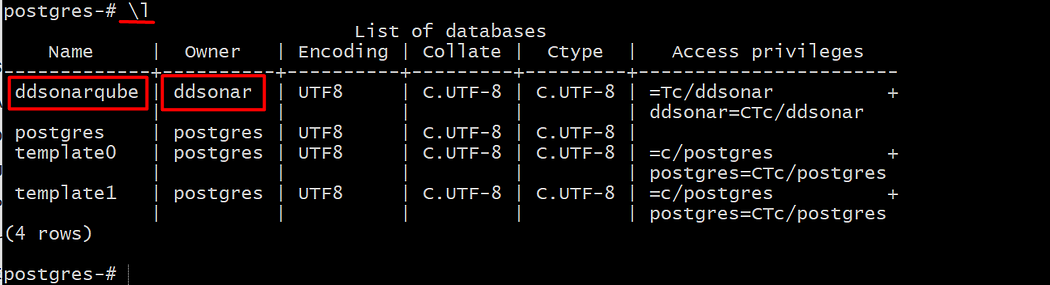


Create a database and grant it ALL PRIVILEGES.

**xiv)** Let's check the created user and the database.

**a)** To check the created database

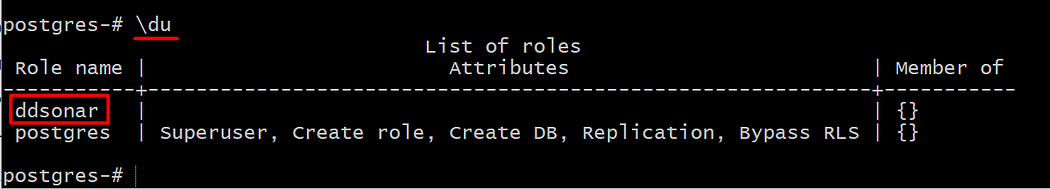
\l



Checking the created Database name

**b)** To check the created database user

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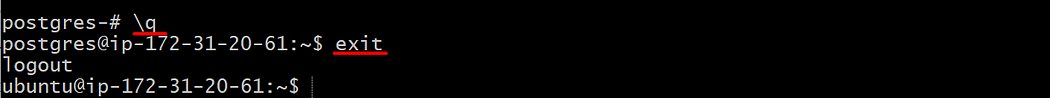
checking the created database user

**xv)** Exit PostgreSQL.

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**xvi)** Return to your non-root sudo user account.

exit



Returning to the non-root user

## **5) Download and Install SonarQube**

**i)** Install the zip utility, which is needed to unzip the SonarQube files.

sudo apt install zip -y

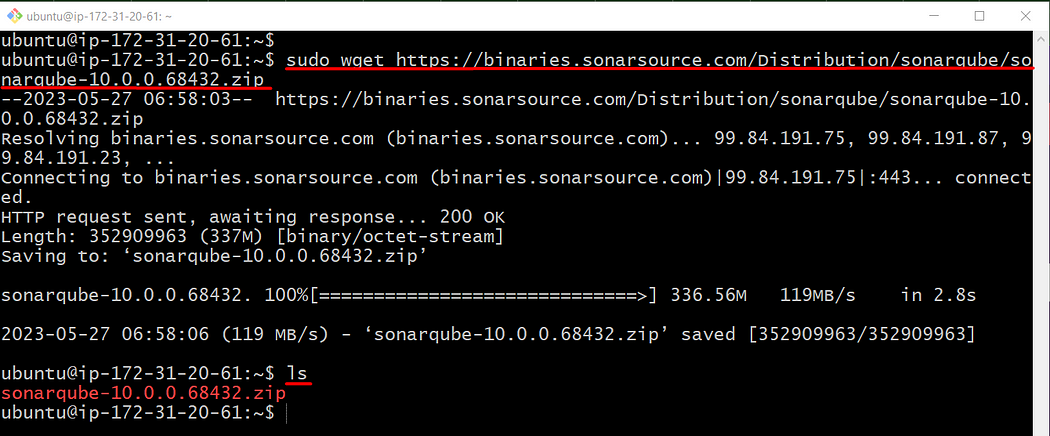
**ii)**Locate the latest download URL from the SonarQube official download page.

*Download the SonarQube distribution files. (you can download the latest SonarQube distribution using the following link)*

[*https://www.sonarsource.com/products/sonarqube/downloads/*](https://www.sonarsource.com/products/sonarqube/downloads/)

Here we are installing the latest version of SonarQube 10.0 community edition (free one)

sudo wget https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-10.0.0.68432.zip



Downloading the latest version (10.0) of SonarQube distribution files.

**iii)** Unzip the downloaded file.

sudo unzip sonarqube-10.0.0.68432.zip

**iv)** Move the unzipped files to**/opt/sonarqube** directory

sudo mv sonarqube-10.0.0.68432 sonarqube

sudo mv sonarqube /opt/

## **6) Add SonarQube Group and User**

Create a dedicated user and group for SonarQube, which can not run as the root user.

***Note:****You can give any name for the sonar user and group. I have here given the user and group name to be the same i.e****ddsonar****.*

**i)** Create a sonar group.

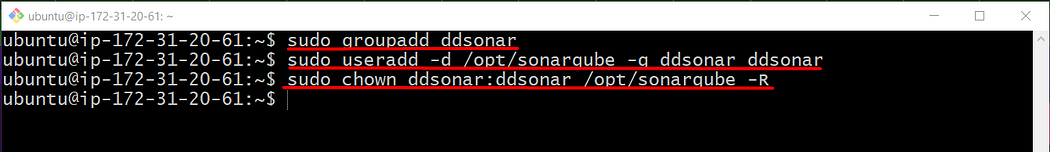
sudo groupadd ddsonar

**ii)** Create a sonar user and set/opt/sonarqube as the home directory.

sudo useradd -d /opt/sonarqube -g ddsonar ddsonar

**iii)** Grant the sonar user access to the /opt/sonarqube directory.

sudo chown ddsonar:ddsonar /opt/sonarqube -R



Creating sonar user and group

## **7) Configure SonarQube**

**i)** Edit the SonarQube configuration file.

sudo nano /opt/sonarqube/conf/sonar.properties

**a)** Find the following lines:

**#sonar.jdbc.username=**

**#sonar.jdbc.password=**

**b)** Uncomment the lines, and add the database user and Database password you created in Step 4 (xi and xii). For me, it’s:

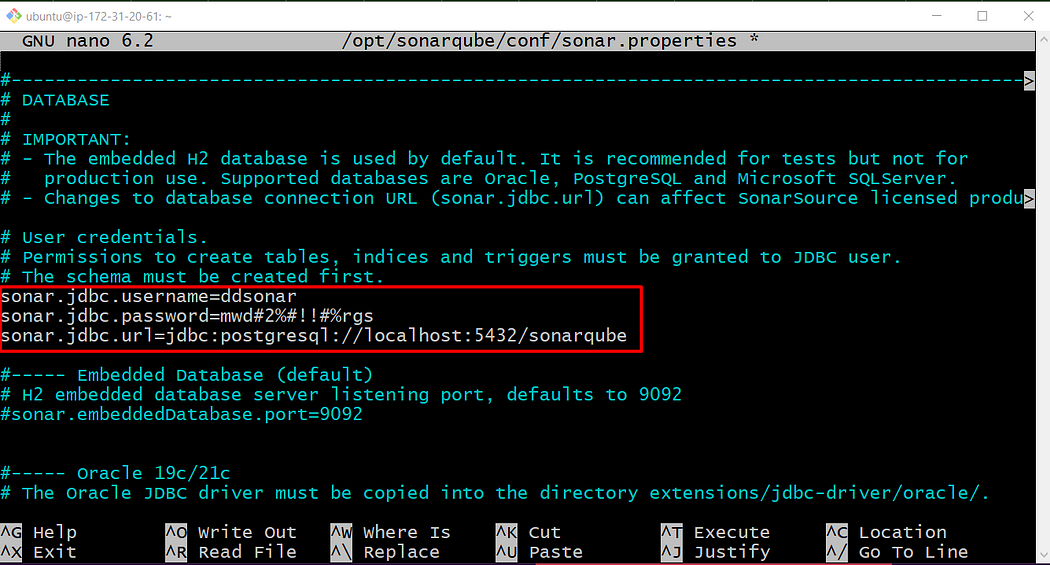
sonar.jdbc.username=**ddsonar**

sonar.jdbc.password=**mwd#2%#!!#%rg**s

**c)** Below these two lines, add the following line of code.

**sonar.jdbc.url=jdbc:postgresql://localhost:5432/ddsonarqube**

*Here,****ddsonarqube****is the database name created.*



Adding the required line of details in the file sonar.properties.

**d)** Save and exit the file.

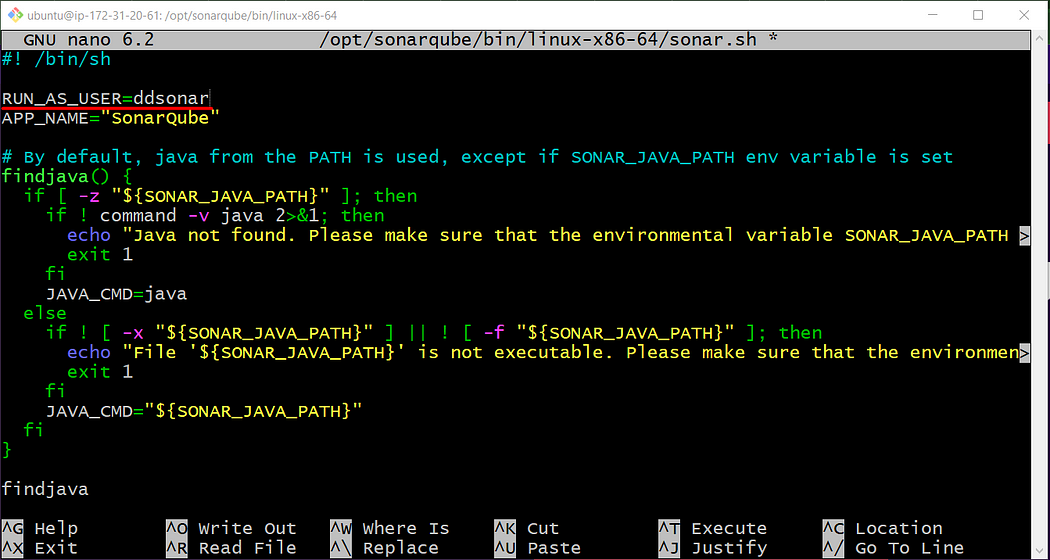
**ii)** Edit the sonar script file.

sudo nano /opt/sonarqube/bin/linux-x86-64/sonar.sh

**a)** Add the following line

**RUN\_AS\_USER=ddsonar**

*Here,****ddsonar****is the name of the user that we have created in step number 6 (ii).*



Adding the RUN\_AS\_USER=ddsonar in the file sonar.sh

**b)**Save and exit the file.

## **8) Setup Systemd service**

**i)** Create a **systemd**service file to start SonarQube at system boot.

sudo nano /etc/systemd/system/sonar.service

**ii)** Paste the following lines to the file.

[Unit]  
Description=SonarQube service  
After=syslog.target network.target  
[Service]  
Type=forking  
ExecStart=/opt/sonarqube/bin/linux-x86-64/sonar.sh start  
ExecStop=/opt/sonarqube/bin/linux-x86-64/sonar.sh stop  
User=ddsonar  
Group=ddsonar  
Restart=always  
LimitNOFILE=65536  
LimitNPROC=4096  
[Install]  
WantedBy=multi-user.target

***Note:****Here in the above script, make sure to change the****User****and****Group****section with the value that you have created.****For me its:***

*User=****ddsonar***

*Group=****ddsonar***



Adding the lines of script to the file sonar.service

**iii)** Save and exit the file.

**iv)** Enable the SonarQube service to run at system startup.

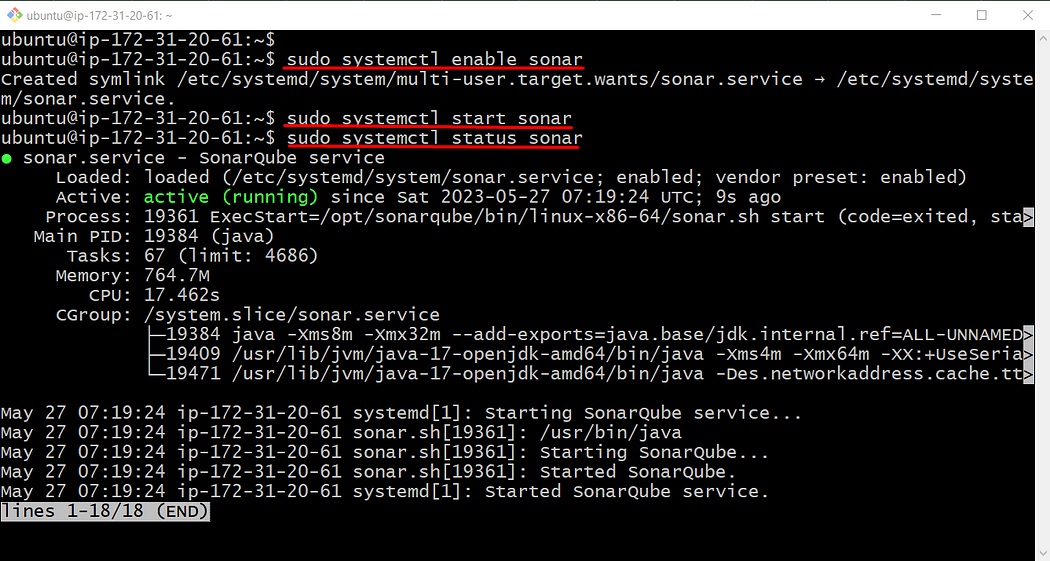
sudo systemctl enable sonar

**v)** Start the SonarQube service.

sudo systemctl start sonar

**vi)** Check the service status.

sudo systemctl status sonar



Starting and checking the status of the SonarQube

**vii)** Hurray, It's up and running.

## **9) Modify Kernel System Limits**

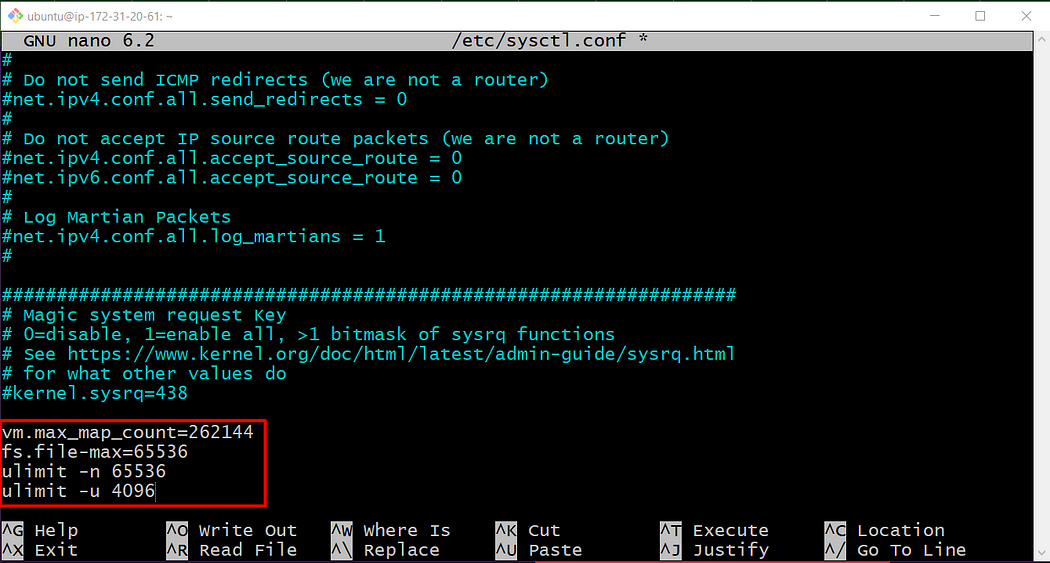
SonarQube uses Elasticsearch to store its indices in an MMap FS directory. It requires some changes to the system defaults.

**i)**Edit the**sysctl** configuration file.

sudo nano /etc/sysctl.conf

**ii)**Add the following lines.

vm.max\_map\_count=262144  
fs.file-max=65536  
ulimit -n 65536  
ulimit -u 4096



Adding the lines of codes at the file /etc/sysctl.conf

**iii)**Save and exit the file.

**iv)** Reboot the system to apply the changes.

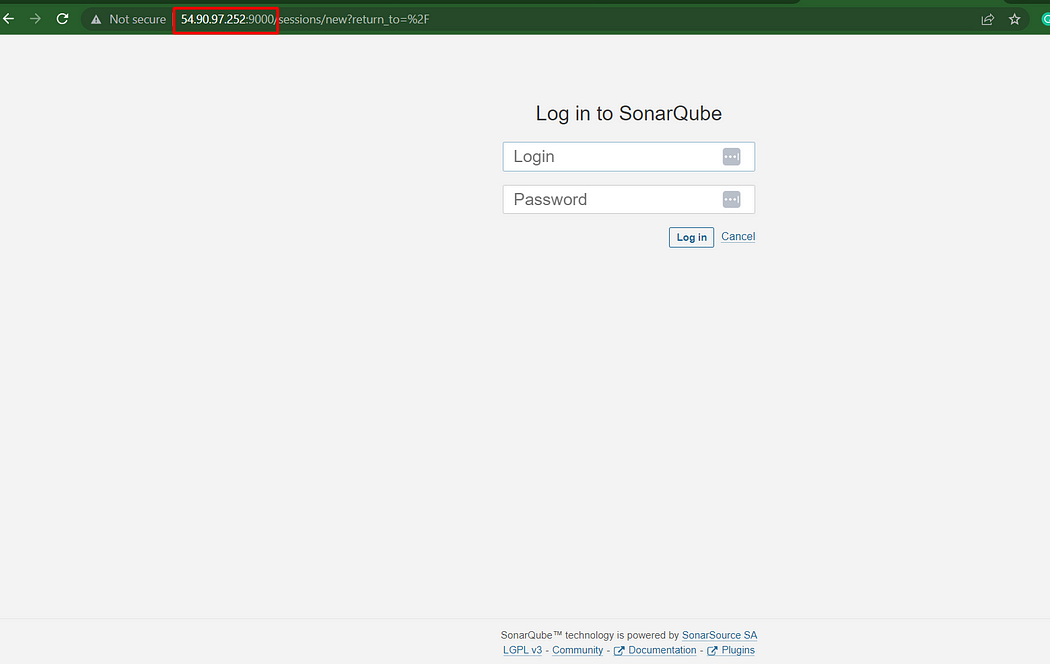
sudo reboot

## **10) Access SonarQube Web Interface**

**i)** Access SonarQube in a web browser at your server’s IP address on port 9000.

**For example,** [http://IP:9000](http://ip:9000/)

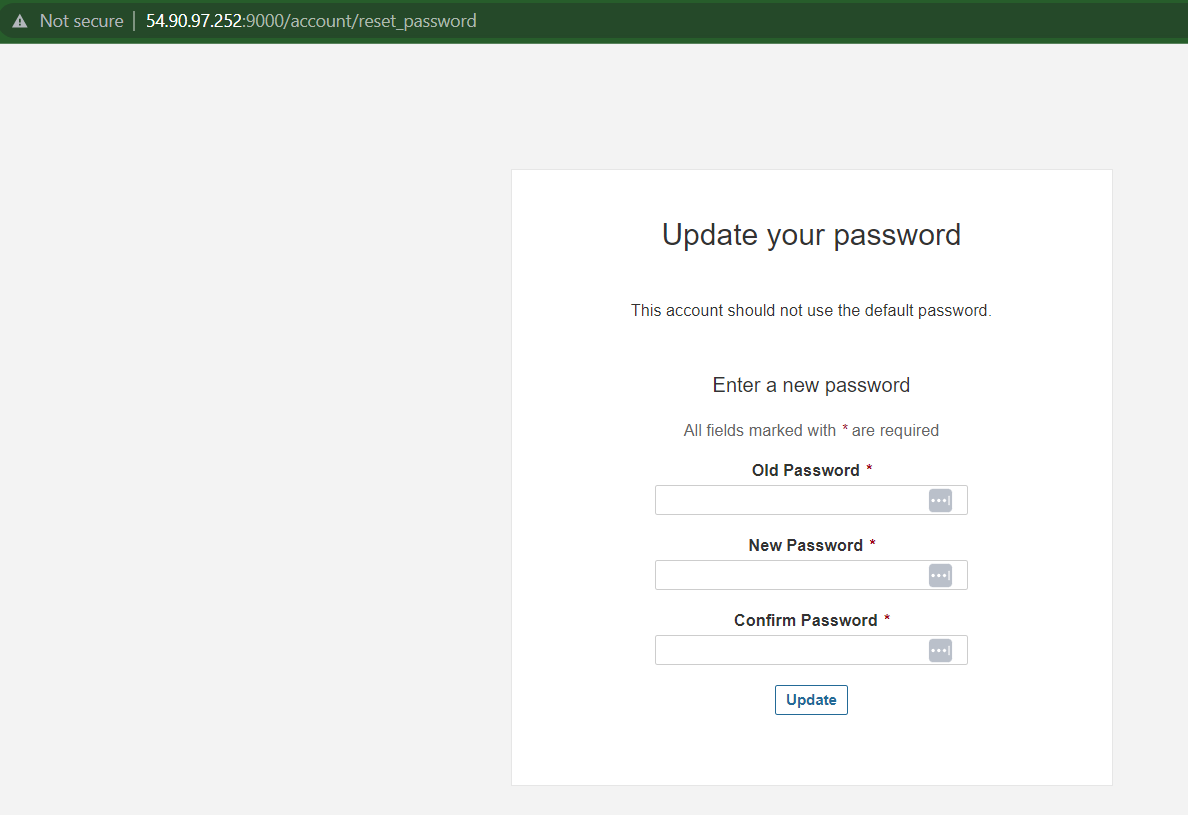
***Note:****the default username and password are****admin****and****admin****respectively.*



Fresh installed SonarQube GUI

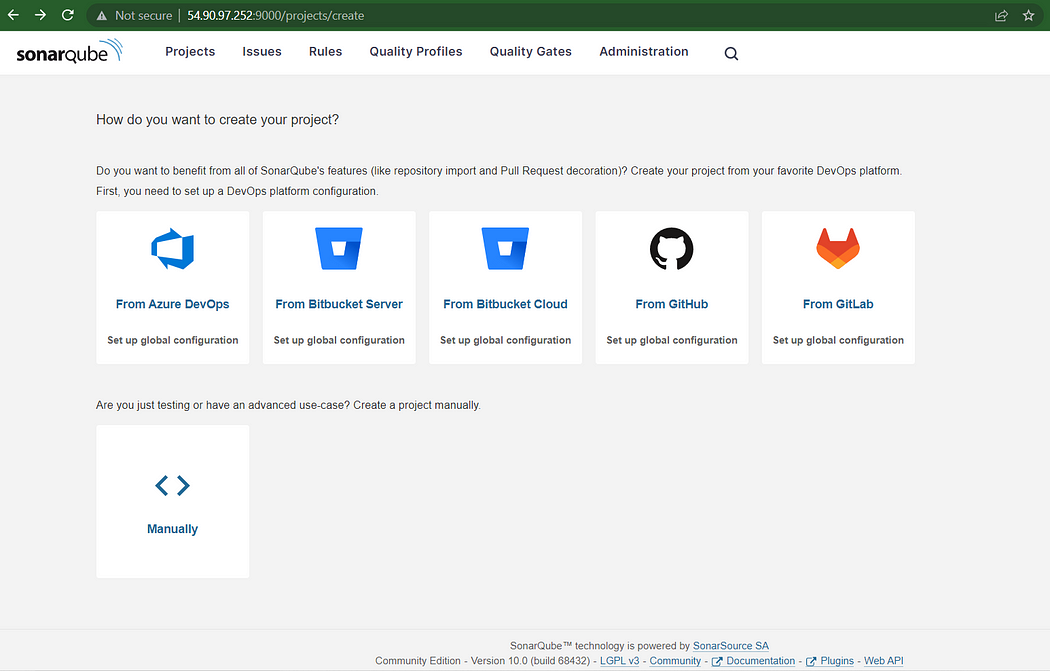
**ii)**Change the Old password with a New one.

Log in with username **admin**and password**admin**. In the next step, SonarQube will prompt you to change your password. **CHANGE THE PASSWORD.**



Change the old password.

**iii)** And yes, we have successfully installed the SonarQube Community version 10.0 on AWS EC2 Ubuntu 22.



We are inside the SonarQube. Let's get started.

## Congratulations, Our SonarQube has been installed successfully.

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