**How to Setup SonarQube on Azure VM | Install SonarQube Server on Ubuntu 18.0.4 VM in Azure Cloud**

SonarQube is one of the popular static code analysis tools. SonarQube enables developers to write cleaner, safer code. SonarQube is open-source, Java based tool. SonarQube uses database for storing analysis results. Database can be MS SQL, Oracle or PostgreSQL.  We will use PostgreSQL as it is open source as well.

**SonarQube Architecture:**

[Diagram

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SonarQube have three components namely

1. Scanner - This contains scanner and analyser to scan application code.

2. SonarQube server - contains Webserver(UI) and search server

3. DB server - used for storing the analysis reports.

Please find steps for installing SonarQube on Ubuntu 18.0.4 in Azure Cloud. Make sure port 9000 is opened in firewall rules.

**Pre-requistes:**  
Instance should have at least 2 GB RAM. Make sure port 9000 is opened as port 9000 is default port for SonarQube.

***How to open port 9000 in Azure VM?***

1. Select VM, under Settings--> choose Network

[Graphical user interface, text, application

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2. Click on Add inbound security role  
  
[[Graphical user interface, application

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3. Make sure you add entries like below:   
9000 as Destination port ranges  
TCP as protocol  
310 as priority number  
port\_9000 as Name

[[Graphical user interface, text, application, email

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 4. Click on Add, once you add it should be like below:

[Graphical user interface, application

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Let us start with java install (skip java install if you already have it installed).

**Change Host Name to SonarQube**  
sudo hostname SonarQube

**Install Open JDK 11**

sudo apt-get update && sudo apt-get install default-jdk -y

**Postgres DB Setup**

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

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sudo wget -q <https://www.postgresql.org/media/keys/ACCC4CF8.asc> -O - | sudo apt-key add -  
[](https://3.bp.blogspot.com/--dt6QOobsoI/W53UHafpNaI/AAAAAAAAAaM/VcWMrVAOb3cOVmRKvAfGRDPUTXEzdwpqACLcBGAs/s1600/Screen%2BShot%2B2018-09-15%2Bat%2B10.53.09%2BPM.png)

sudo apt-get -y install postgresql postgresql-contrib

Ignore the message in red color below:

[Text

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sudo systemctl start postgresql  
sudo systemctl enable postgresql

**Login as postgres user**  
sudo su - postgres

**Now create a user below by executing below command**

createuser sonar  
  
**9. Switch to sql shell by entering**  
psql

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**Execute the below three lines (one by one)**

ALTER USER sonar WITH ENCRYPTED password 'password';

CREATE DATABASE sonarqube OWNER sonar;

 GRANT ALL PRIVILEGES ON DATABASE sonarqube to sonar;

**Now to come out of Postgres by below command and press enter**

\q

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and then type exit to come out of postgres user.

[](https://3.bp.blogspot.com/-_Y3_tZQ-ACs/W53V72gTtKI/AAAAAAAAAbE/gR65bNcoalIXyzKA_2P7gJiH8YI63uinwCLcBGAs/s1600/Screen%2BShot%2B2018-09-15%2Bat%2B11.02.38%2BPM.png)

**3. Download SonarQube and Install**

sudo wget https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-8.6.0.39681.zip

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sudo apt-get -y install unzip

sudo unzip sonarqube\*.zip -d /opt

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sudo mv /opt/sonarqube-8.6.0.39681 /opt/sonarqube -v

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**Create Group and User:**

sudo groupadd sonarGroup

**Now add the user with directory access**

sudo useradd -c "user to run SonarQube" -d /opt/sonarqube -g sonarGroup sonar

sudo chown sonar:sonarGroup /opt/sonarqube -R

**Modify sonar.properties file**  
sudo vi /opt/sonarqube/conf/sonar.properties  
uncomment the below lines by removing # and add values highlighted yellow  
sonar.jdbc.username=sonar  
sonar.jdbc.password=password

[Text, timeline

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Next, add the below line:  
sonar.jdbc.url=jdbc:postgresql://localhost/sonarqube

[](https://1.bp.blogspot.com/-5quyxLgWAb0/XqWw9NREuqI/AAAAAAAACAI/ZqmkaTixd4YI4LwrEhv3qCxtwl6x5HvjwCLcBGAsYHQ/s1600/sq.png)

Now press escape button, and enter :wq! to come out of the above screen.

**Edit the sonar script file and set RUN\_AS\_USER**

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

Add enable the below line

RUN\_AS\_USER=sonar

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**Setup SonarQube as a service(this will enable to start automatically when you restart the server)**

Execute the below command:

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

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add the below code in green color:  
[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  
LimitNOFILE=131072  
LimitNPROC=8192  
User=sonar  
Group=sonarGroup  
Restart=always  
  
[Install]  
WantedBy=multi-user.target

Save the file by entering :wq!

**Kernel System changes**

we must make a few modifications to a couple of kernel system limits files for sonarqube to work.

sudo vi /etc/sysctl.conf

Add the following lines to the bottom of that file:

vm.max\_map\_count=262144  
fs.file-max=65536

Next, we're going to edit limits.conf. Open that file with the command:

sudo vi /etc/security/limits.conf

At the end of this file, add the following:

sonar   -   nofile   65536  
sonar   -   nproc    4096

**Reload system level changes without server boot**

sudo sysctl -p

**Start SonarQube Now**

sudo systemctl start sonar

sudo systemctl enable sonar  
  
sudo systemctl status sonar

Now wait for SonarQube to come up after you executed above commands, It will take a few mins to come up.

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type q now to come out of this mode.  
Now execute the below command to see if Sonarqube is up and running. This may take a few minutes.  
  
tail -f /opt/sonarqube/logs/sonar\*.log  
  
Make sure you get the below message that says sonarqube is up..

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Now access sonarQube UI by going to browser and enter public dns name with port 9000

Now to go to browser --> [http://your\_SonarQube\_publicdns\_name:9000/](http://publicdns_name:9000/)