**Jenkins Installation Steps for V9 HP2B**

**Version -** 2.289.2 LTS **Installation Type –** Deployment of WAR File

**Mounting of /opt partition**

We will be creating a new Volume group from the newly attached 500 Gb disk and then Create a new Logical Volume out of it

yum -y install lvm2

sudo vgcreate vg01 /dev/xvdb

sudo lvcreate -l 100%FREE --name lvol01 vg01 -- **to create a new logical volume in LVM**

Once Logical Volume is created, we assign File System type to it which is ext4 in our case

sudo mkfs -t ext4 /dev/vg01/lvol01

After that we create a directory /opt and assign our 500Gb Volume to the /opt folder

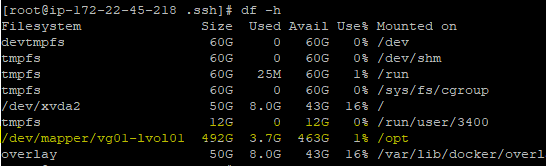
sudo mkdir -p /opt

sudo echo '/dev/vg01/lvol01 /opt ext4 defaults 1 2' >> /etc/fstab

Then we run the mount command which will now mount the /opt as a new partition

sudo mount -a

You can verify by running df -h command



Next we will be installing Jenkins and other requirements in /opt partition

**Summary**

* Install Java Version 8 – Jenkins is a Java based application, hence Java is a must.
* Install Apache Tomcat Version 9 – Tomcat is required to deploy Jenkins war file.
* Download Jenkins war File – This war is required to install Jenkins.
* Deploy Jenkins war File – Jenkins war file needs to be deployed using Tomcat to run Jenkins.
* Install Suggested Plugins – Install a list of plugins suggested by Jenkins.

**Installing pre requisites**

Run the below commands as root user,

yum install java-1.8.0-openjdk git

yum install wget

cd /opt/

wget <https://archive.apache.org/dist/tomcat/tomcat-9/v9.0.50/bin/apache-tomcat-9.0.50.tar.gz>

tar –xvzf apache-tomcat-9.0.50.tar.gz

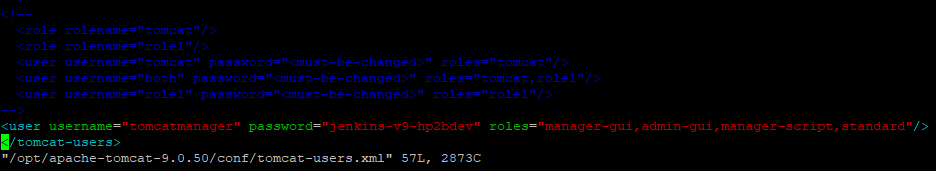
**Configuring Tomcat server**

We have to create Admin user and assign roles to him to proceed

vi /opt/apache-tomcat-9.0.50/conf/tomcat-users.xml

Add the below line into that file

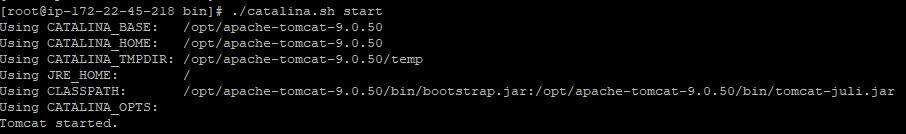
<user username="<some-tomacat-user>" password="<some-tomacat-pwd>" roles="manager-gui,admin-gui,manager-script,standard"/>



We can try running the Tomcat Apache server without any application by

cd /opt/apache-tomcat-9.0.50/bin

./ catalina.sh start



You can get the hostname of the Server using ifconfig command and try accessing the below url

yum install net-tools

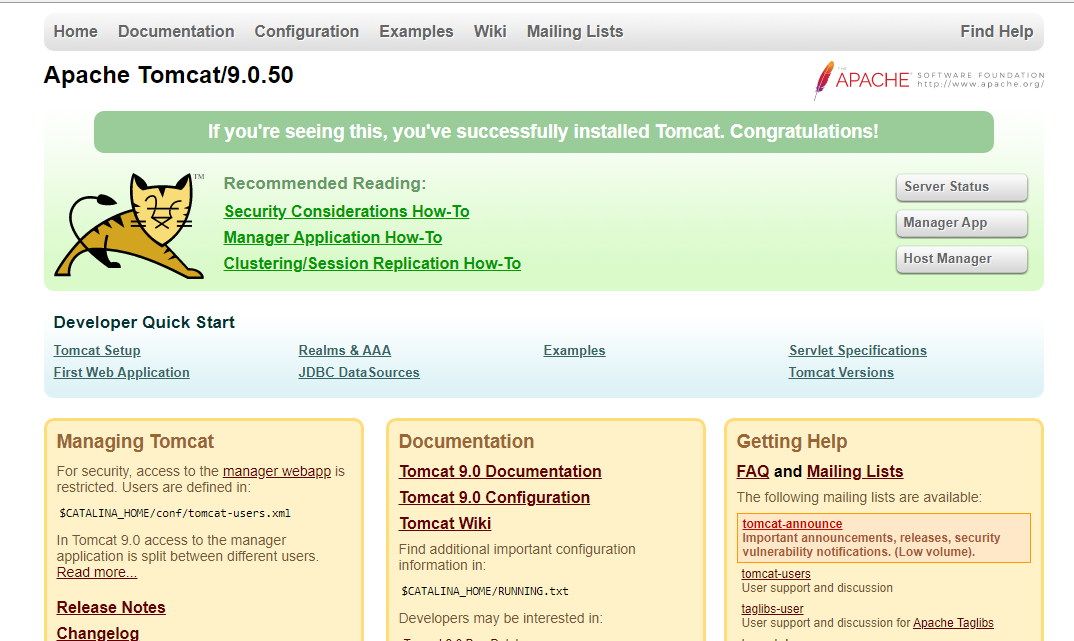
http://< your hostname>:8080

eg : <http://172.23.220.118:8080/>

You will be redirected to Tomcat Apache Manager page

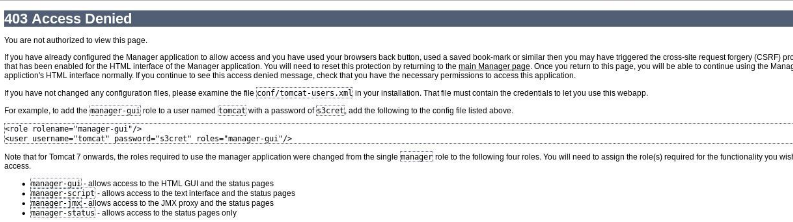
**For using locate command:**

Install locate  
rpm -qa | grep findutils-->check mlocate  
yum install mlocate-->install locate  
updatedb -->update in db



Here try selecting the Manager Tool button

You will face an error like access denied, this is because by default Tomcat will allow only browser from machine which hosts the Apache Server



So we need to make a change in context.xml present under the manager sub directory,

cd /opt/apache-tomcat-9.0.50/webapps/manager/META-INF

Open the file context.xml and comment the Valve configuration line alone, check below

<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"

allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" /> -->

**/opt/apache-tomcat-9.0.50/webapps/host-manager/META-INF/context.xml(for host-manager)**

**<Context antiResourceLocking="false" privileged="true" >**

**<!--<Valve className="org.apache.catalina.valves.RemoteAddrValve"**

**allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" />-->**

**</Context>**



source ~/.bash\_profile --- for restart

Restart Tomcat server by going to bin path again,

./ catalina.sh stop

./ catalina.sh start

**Deploying the Jenkins WAR file into Tomcat Server**

You can find the Latest Jenkins LTS version in this page - <https://www.jenkins.io/download/>

Download the Generic Java package and move it to server using winscp (or)

Use this command to download it directly to the server

wget <https://get.jenkins.io/war-stable/latest/jenkins.war>

Once downloaded move the WAR file to the path - /opt/apache-tomcat-9.0.50/webapps/

Moving to this path will directly deploy the Application into Tomcat

We have to perform a restart to load the Application in Tomcat

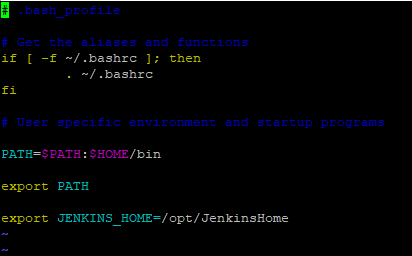
**But very important before, restarting you have to mention the JENKINS\_HOME variable otherwise it will automatically set to the user home directory (i.e root in our case)**

Open .bash\_profile file of Root user and Jenkins home variable

vi ~/.bash\_profile

mkdir -p /opt/JenkinsHome

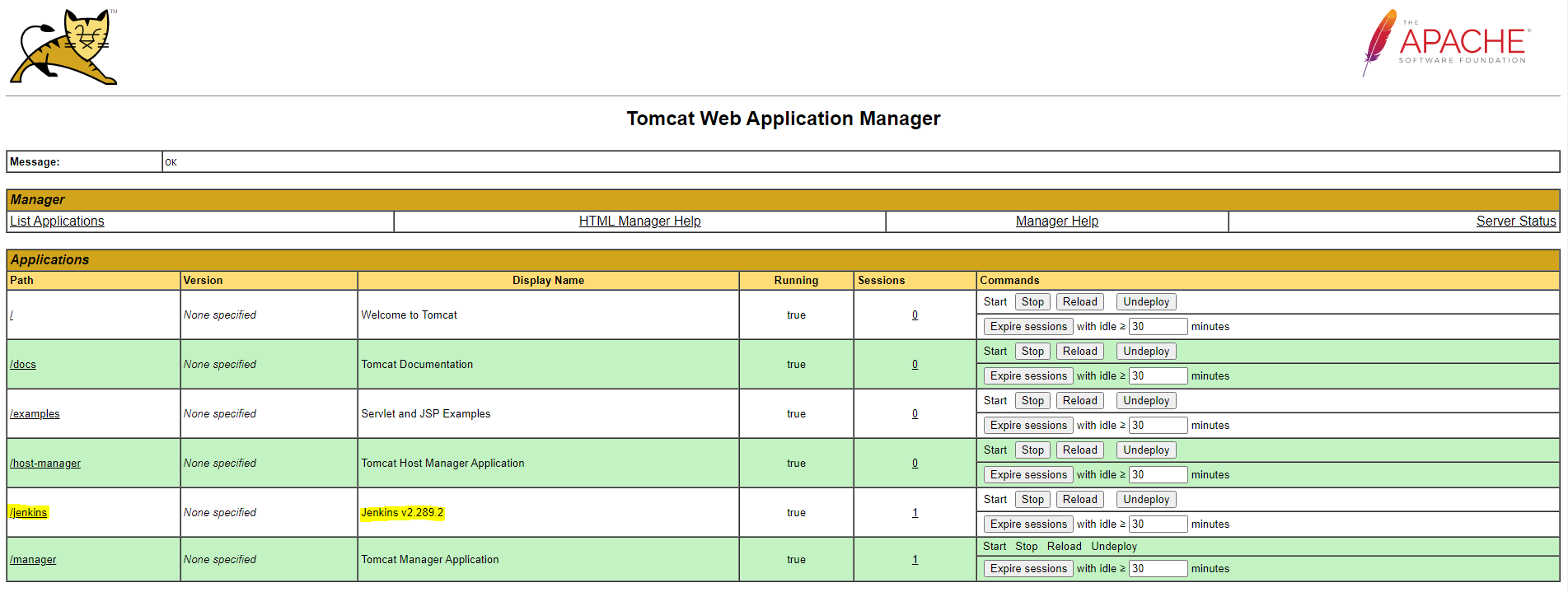
Add this line inside the file - export JENKINS\_HOME=/opt/JenkinsHome



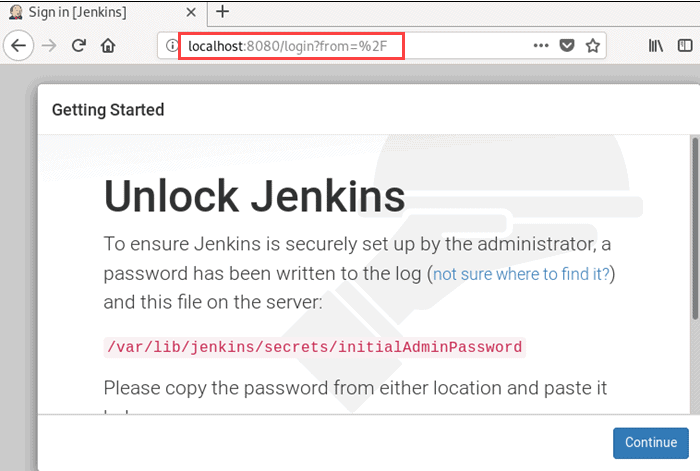
Perform restart again

/opt/apache-tomcat-9.0.50/conf – in this path tomcat-users.xml – last line we can find the username and password

Now if you open the Manage Tool page of Tomcat Apache, You could see the Jenkins under the Application Table



**Now Try accessing this - http://< your hostname>:8080/Jenkins**



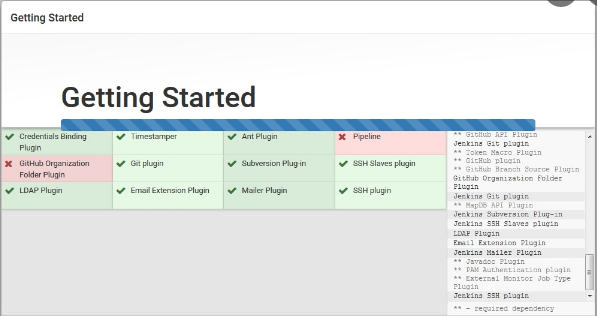
You will land in Unlock Jenkins Page, this means that our **Jenkins is up and running.**

**Configuring in Jenkins UI**

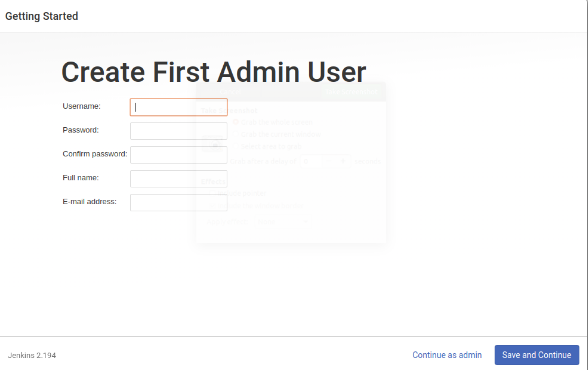
Once you hit the URL, you will be prompted to unlock Jenkins using the Initial Admin password placed at this path

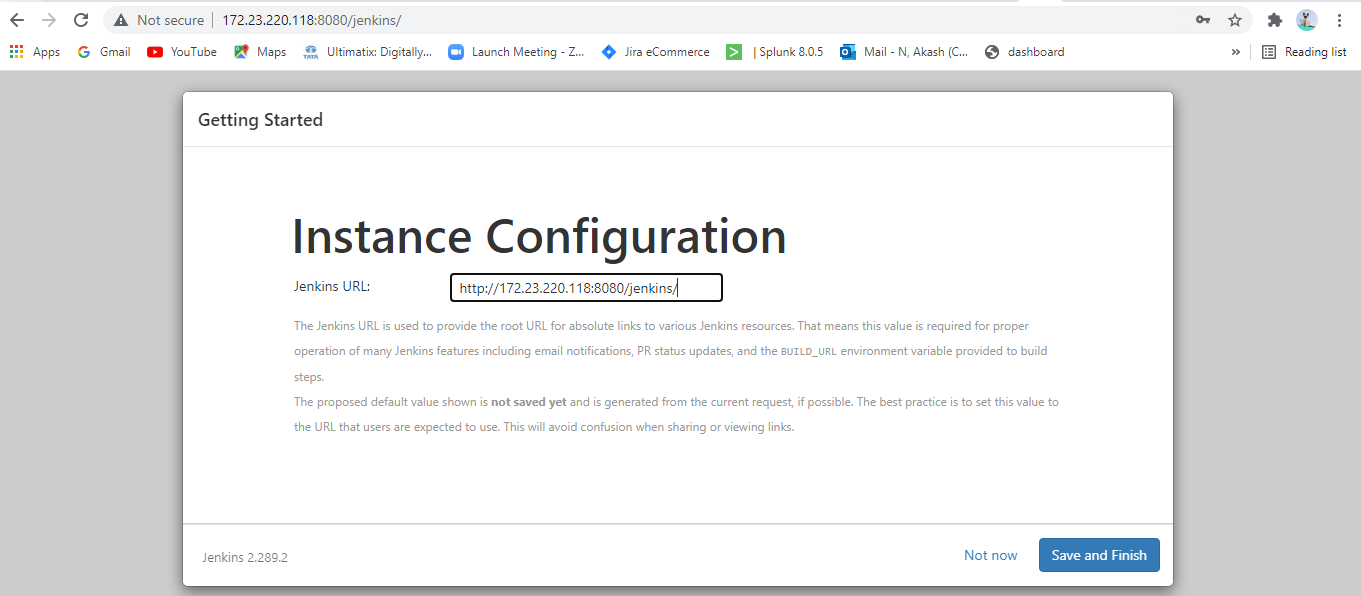
***{ JENKINS\_HOME\_PATH}secrets/initialAdminPassword***

Enter the Password

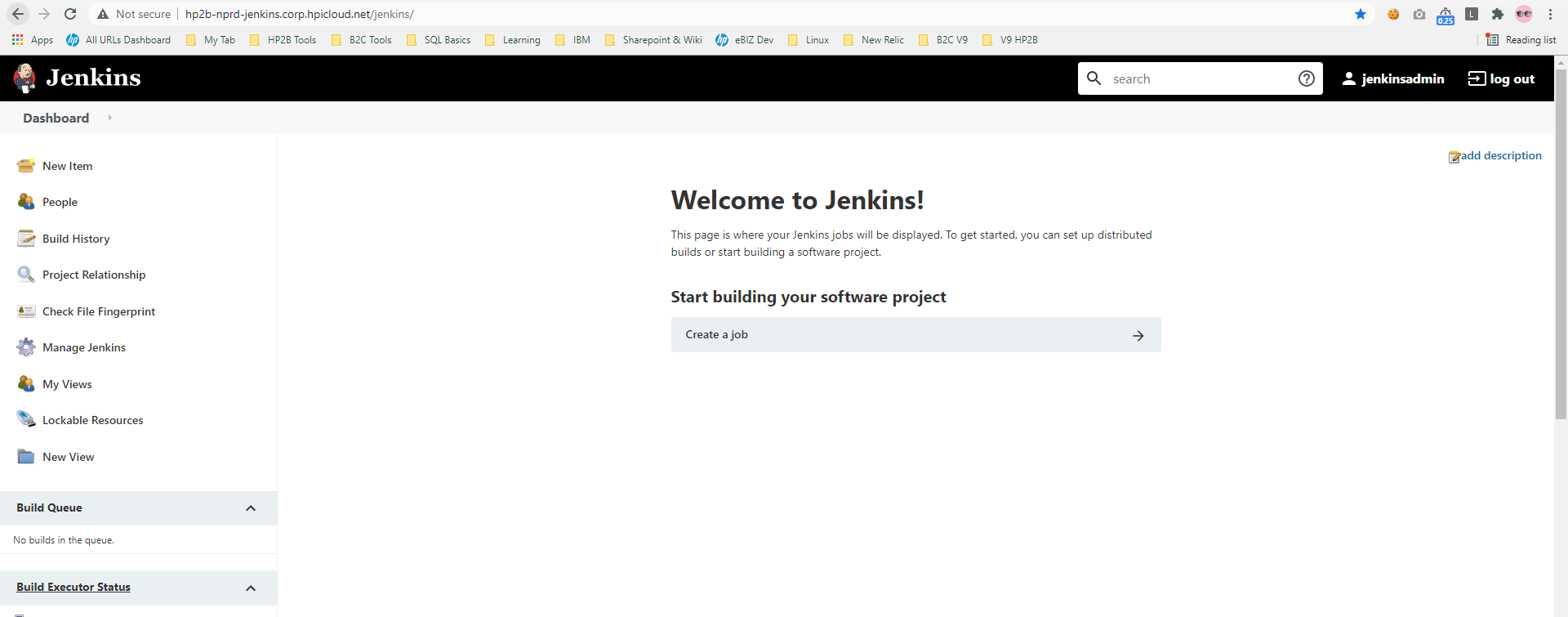
Install the Suggested Plugins 

Create your First Admin User



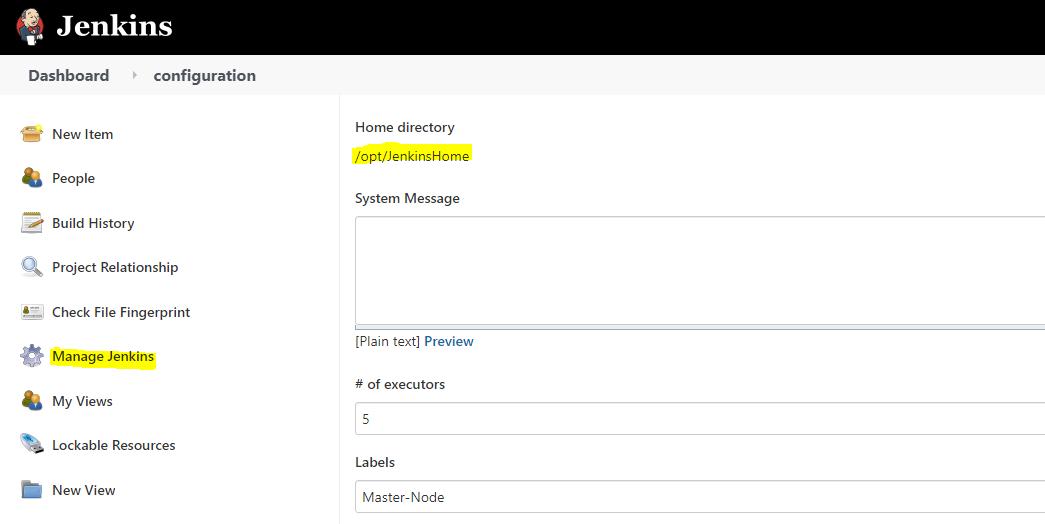


***Then there you go, Jenkins is ready !!!***



Validate the Jenkins home path once by checking under

***Manage Jenkins 🡪 Configure System***



**Adding Agent/Slave Nodes to Jenkins**

We need Java and GIT installed in Agent Nodes to perform Jenkins Operations

yum –y install java-1.8.0-openjdk git

It is advisable to use the same user across all the Jenkins Master and Agent nodes

In our case since we ran Tomcat and deployed Jenkins WAR files as root user, we are going to use root everywhere

**Mounting of /opt partition in Nodes** (Same as mounting of master Node.)

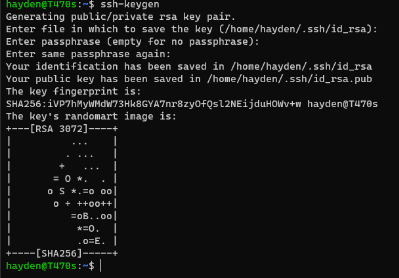
**Generating SSH keys in Master Jenkins Server**

We need to connect Master to Agent nodes to Integrate them

Go into the Master server and run ssh-keygen command as root user

Command - ssh-keygen

Example screenshot



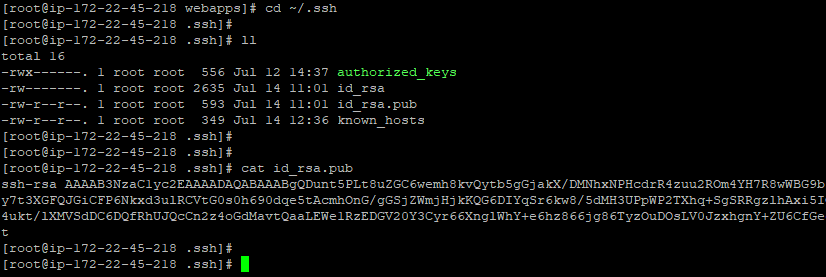
It will ask you for the location to store the id\_rsa (Private key) and id\_rsa.pub (Public key) by default it is the home directory so proceed by giving enter

It is better to provide passphrase, so note it down somewhere safe

Once done, you can find the files under the folder .ssh in Root home directory

**Creating Passwordless SSH between Master and Agent Node**

We need to copy the id\_rsa.pub key and paste it in authorized\_keys file of the Agent nodes which Master Jenkins will be accessing

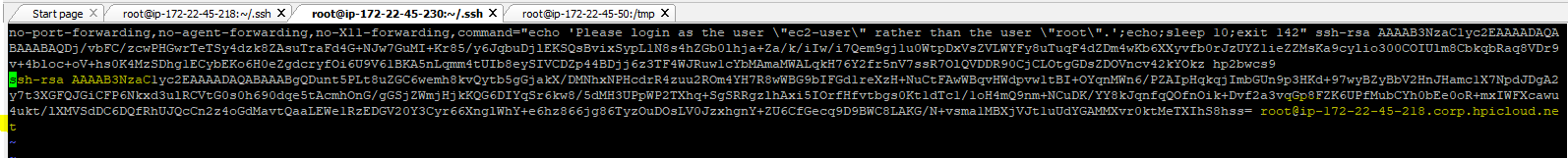


Authorized\_keys file will be present inside user home directory (In our case it is root) under .ssh folder

If not present create a file and paste the public key in it

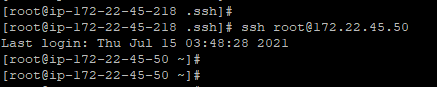
cd ~/.ssh

vi authorized\_keys



Once this done, try to ssh from Master Server to the Slave Node (Both users are root)

ssh root@<your agent node host>



It will prompt you to confirm that this is a Verified Host, proceed by giving yes

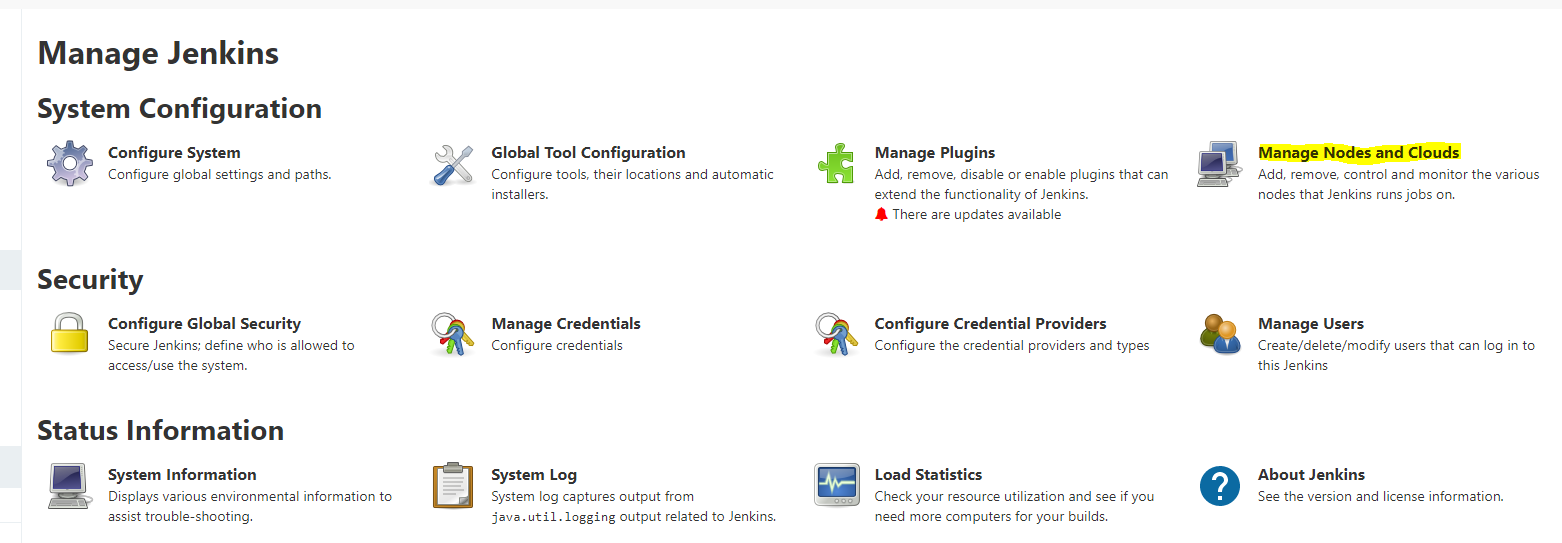
This will add it in known\_host file, which will be useful for selecting strategy as Known Host Verification in Jenkins UI while adding the Agent Node

**Adding the Agent Node from Jenkins UI**

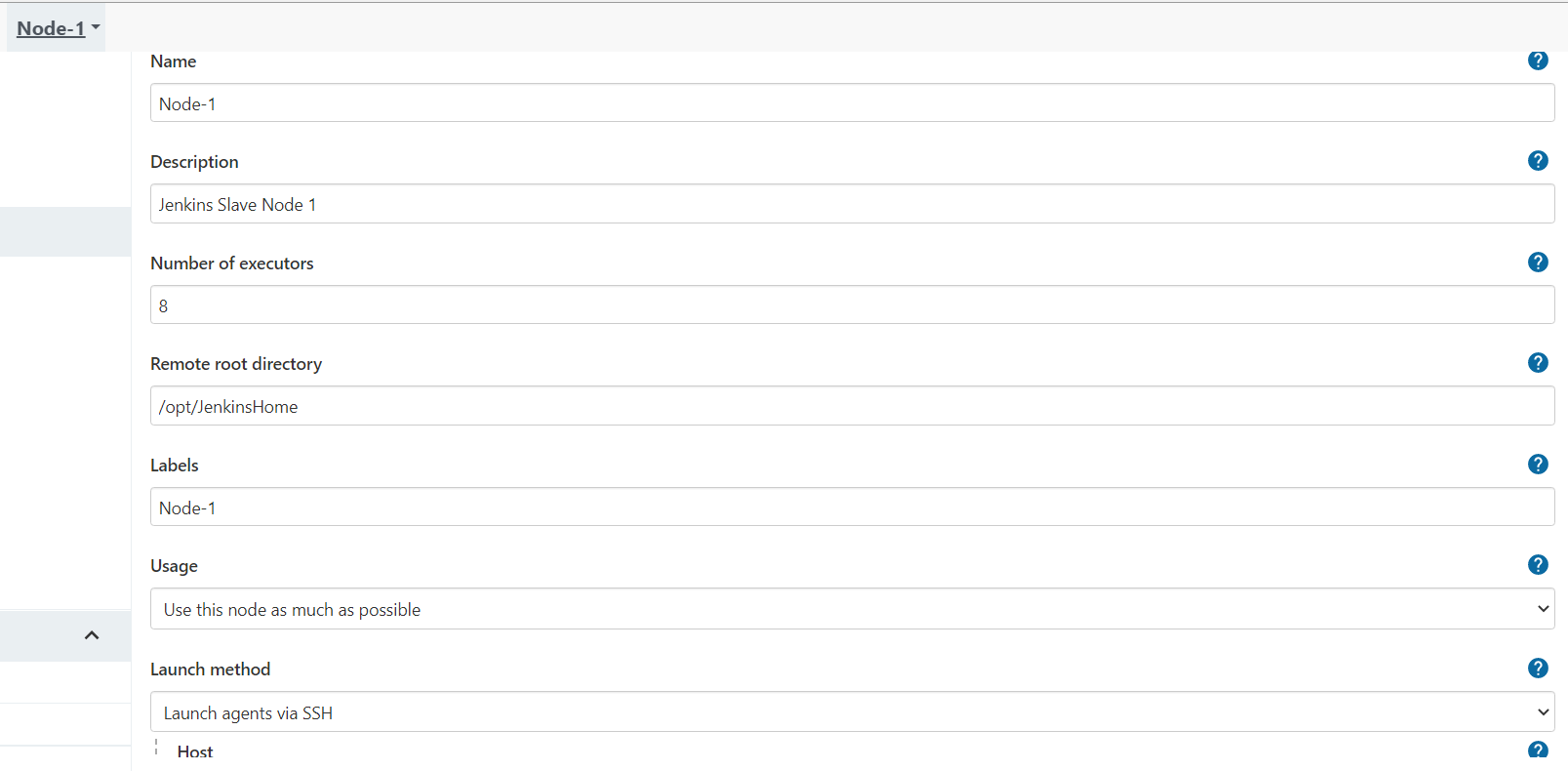
Once done go to Jenkins UI and under

mkdir -p /opt/ JenkinsHome

***Manage Jenkins 🡪 Mange Nodes and Clouds***



Select **New Node**, Enter the Node name and select the Radio button Permanent Agent and give next



Proceed by entering the Name, Description. No. of executors you require and Remote Directory

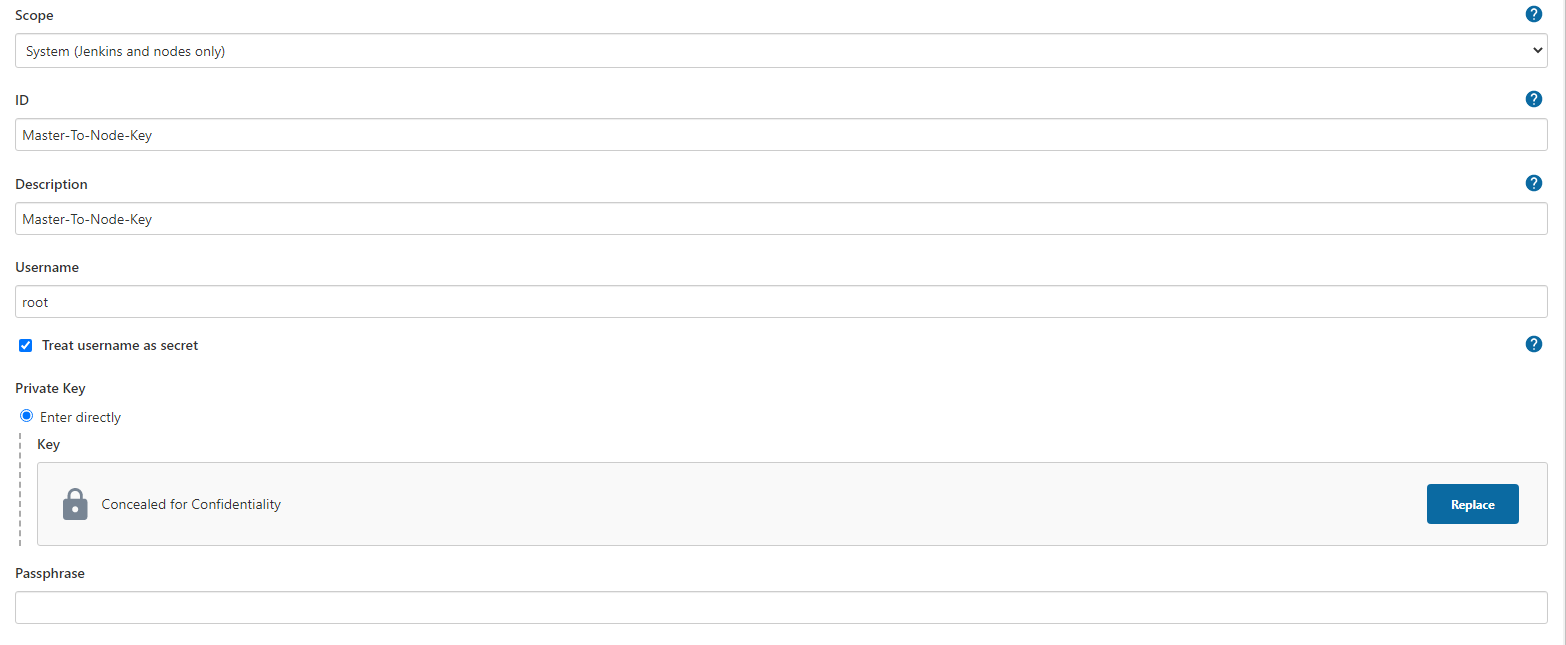
**Note :** *It is advisable to use the same Home directory structure in Master in Agent node as well, so create the Remote directory (Eg /opt/JenkinsHome) in Agent server first and then enter the same path in Remote Directory section*

Select the Usage as Use the Node as much as possible

And Launch Method as Launch Agent via SSH

Enter the Hostname details

Under Credentials, Select Add and choose Jenkins



Select the Kind as **SSH username with Private key** and Scope as **Jenkins**

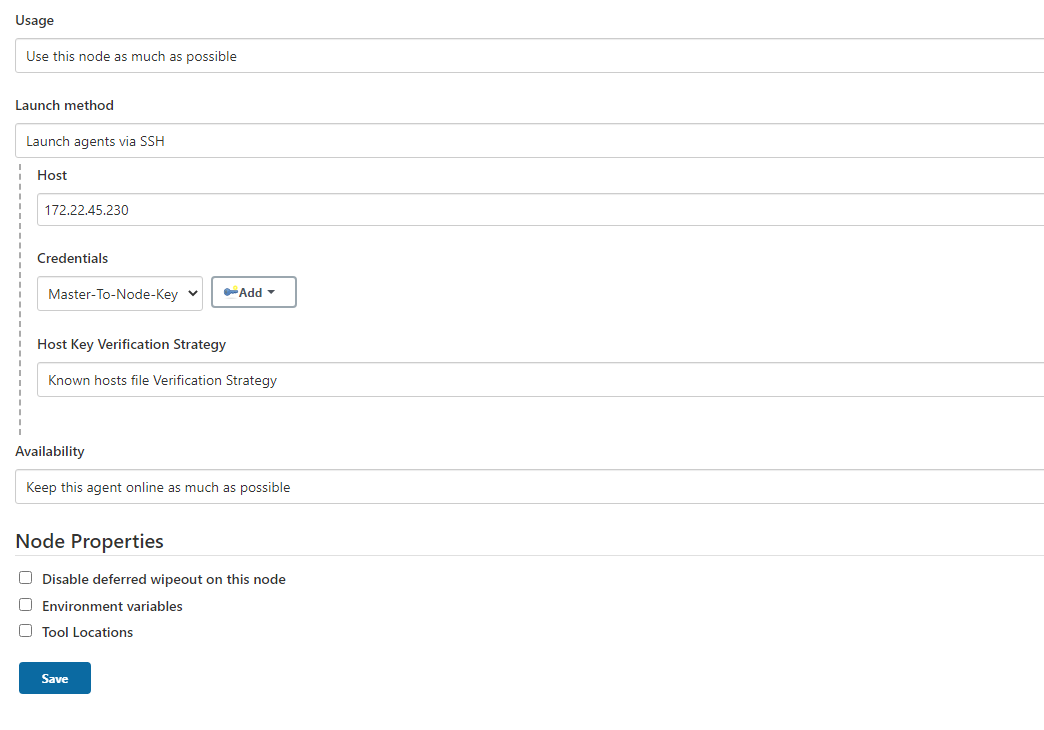
Enter the ID (Eg Master-To-Node-Key), Username and select the Checkbox **Treat Username as Secret**

Choose **Enter Directly** and Enter the id\_rsa (Private key) content of the Master Jenkins server in that section

(Those who have the Private key can access any machine which contains respective public key in their authorized\_keys file)

Finish by giving **Add**

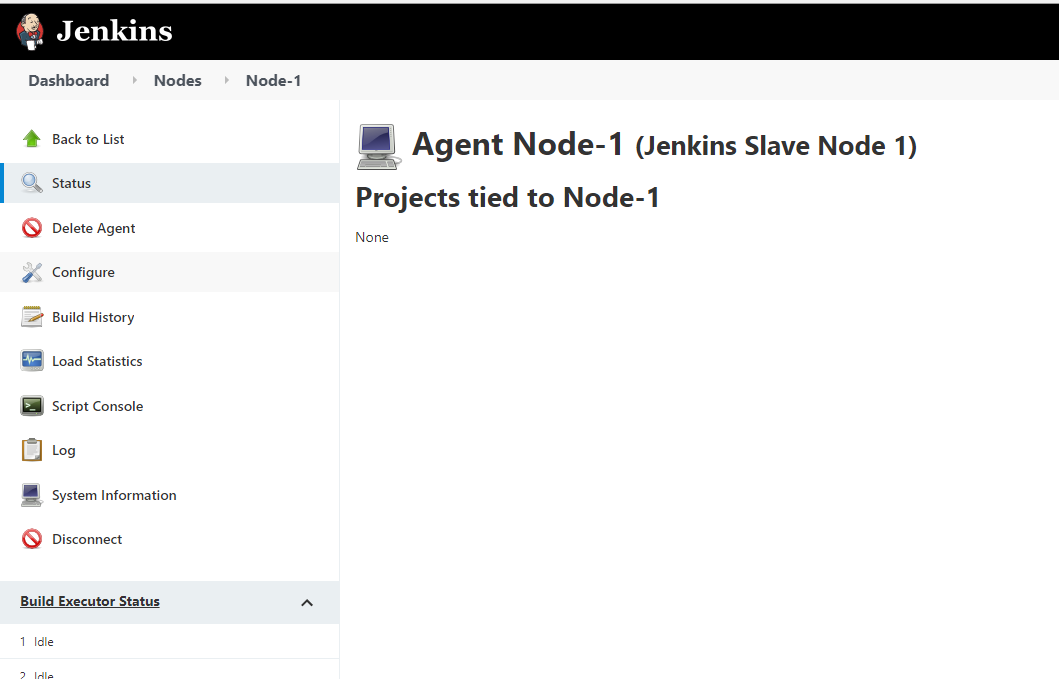
Now Select the Credentials which you just now created



Select the Host Key Verification Strategy as **Know Host file Verification Strategy** which we previously discussed

Leave others to default and Finish by giving **Save**.

Master Jenkins will now try to launch the Agent node, which will come online in few minutes.



You can confirm the node is up by checking under Build Executor Tab in Jenkins Home page, you can see the Node name with the number of Executors which you entered while Creating the Node.



So we have brought up the Jenkins and have Integrated the Node Agents as well, follow the same steps if you want another Node to be added.

***END***