Jenkins installation on EC2

Introduction

Jenkins is an open-source automation server primarily used for continuous integration and continuous delivery (CI/CD) in software development. It plays a crucial role in automating various stages of the software delivery process, including building, testing, and deploying applications.

Why Jenkins is Widely Used

1. Open Source: Jenkins is free to use and has a large community that contributes to its development, ensuring continuous improvement and support.
2. Extensibility: With hundreds of plugins available, Jenkins can integrate with virtually any tool in the CI/CD toolchain, allowing teams to customize their workflows according to specific needs.
3. Cross-Platform Support: Jenkins can run on various operating systems, including Windows, macOS, and Linux, making it versatile for different environments.
4. Pipeline as Code: Jenkins supports defining build processes as code through Jenkinsfiles, which allows for version control of the CI/CD process itself. This approach enhances collaboration among team members.
5. Scalability: Jenkins can distribute workloads across multiple machines, improving performance and enabling parallel execution of jobs.
6. Real-Time Feedback: By automating the build and test processes, Jenkins provides immediate feedback on code changes, helping developers identify issues early in the development cycle.

These features make Jenkins a popular choice among development teams looking to implement efficient CI/CD practices and streamline their software delivery processes.

Step 1: Launch an EC2 Instance

1. **Log in to AWS Management Console**.
2. **Navigate to EC2** and click on **Launch Instance**.
3. **Choose an Amazon Machine Image (AMI)**:
    - Select an Amazon Linux 2 AMI or Ubuntu Server (LTS version).
4. **Choose an Instance Type**:

    - Select a type (e.g., t2.micro for free tier).
5. **Configure Instance Details**: (optional)
    - Modify settings as needed.
6. **Add Storage**: (default settings are usually sufficient)
7. **Configure Security Group**:
    - Create a new security group or select an existing one.
    - **Add Rules**:
        - HTTP: Port 80
        - HTTPS: Port 443 (optional)
        - Custom TCP Rule: Port 8080 (default Jenkins port)
8. **Review and Launch** the instance.
9. **Select or create a key pair** to access the instance.

Step 2: Connect to Your EC2 Instance

Connect using SSH:

```
ssh -i path_to_your_key.pem ec2-user@your_ec2_public_dns
```

Step 3: Update your local package index and Install Java

```
sudo apt update
sudo apt install openjdk-11-jdk -y
```

```
ubuntu@ip-172-31-12-13:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2109 kB]
Get:11 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [363 kB]
Get:12 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [17.9 kB]
Get:13 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [2572 kB]
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [445 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1133 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [265 kB]
Get:17 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [26.4 kB]
```

```
ubuntu@ip-172-31-12-13:~$ sudo apt install openjdk-11-jdk -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  alsa-topology-conf alsa-ucm-conf at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service
  gsettings-desktop-schemas java-common libasound2 libasound2-data libatk-bridge2.0-0 libatk-wrapper-java
  libatspi2.0-0 libavahi-client3 libavahi-common-data libavahi-common3 libcups2 libdconf1 libdrm-amdgpu1 l
  libfontenc1 libgif7 libgl1 libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0
  libjpeg-turbo8 libjpeg8 liblcms2-2 libllvm15 libpciaccess0 libpcsclite1 libpthread-stubs0-dev libsensors
  libxau-dev libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-shape0 l
  libxcomposite1 libxdmcp-dev libxfixes3 libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxpm4 libxrandr
  libxxf86dga1 libxxf86vm1 openjdk-11-jdk-headless openjdk-11-jre openjdk-11-jre-headless session-migratio
```

Step 4: Add Jenkins Repository

Import the GPG Key:

For Ubuntu:

```
 sudo wget -O /usr/share/keyrings/jenkins-keyring.asc\
https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
```

Then add a Jenkins apt repository entry:

```
 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
```

```
ubuntu@ip-172-31-12-13:~$   sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
    https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
--2024-10-17 07:06:28--  https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
Resolving pkg.jenkins.io (pkg.jenkins.io)... 151.101.154.133, 2a04:4e42:24::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)|151.101.154.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3175 (3.1K) [application/pgp-keys]
Saving to: '/usr/share/keyrings/jenkins-keyring.asc'

/usr/share/keyrings/jenkins-keyring.asc   100%[=====================================

2024-10-17 07:06:28 (34.9 MB/s) - '/usr/share/keyrings/jenkins-keyring.asc' saved [31

ubuntu@ip-172-31-12-13:~$ echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.as
    https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
    /etc/apt/sources.list.d/jenkins.list > /dev/null
```

Step 5: Update your local package index, then finally install Jenkins:

```
sudo apt-get update
sudo apt-get install fontconfig openjdk-11-jre
sudo apt-get install jenkins
```

```
ubuntu@ip-172-31-12-13:~$ sudo apt-get update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
```

```
ubuntu@ip-172-31-40-129:~$ sudo apt-get install fontconfig openjdk-11-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
openjdk-11-jre is already the newest version (11.0.24+8-1ubuntu3~22.04).
openjdk-11-jre set to manually installed.
The following NEW packages will be installed:
  fontconfig
```

```
ubuntu@ip-172-31-12-13:~$ sudo apt-get install jenkins
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  net-tools
The following NEW packages will be installed:
  jenkins net-tools
0 upgraded, 2 newly installed, 0 to remove and 12 not upgraded.
Need to get 91.5 MB of archives.
After this operation, 94.3 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools
```

Step 6: Start and Enable Jenkins

```
sudo systemctl start jenkins
sudo systemctl enable jenkins
```

```
ubuntu@ip-172-31-12-13:~$ sudo systemctl start jenkins
ubuntu@ip-172-31-12-13:~$ sudo systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable jenkins
ubuntu@ip-172-31-12-13:~$ sudo systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
     Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2024-10-17 07:09:56 UTC; 1min 26s ago
   Main PID: 4958 (java)
      Tasks: 37 (limit: 1130)
     Memory: 289.0M
        CPU: 17.811s
     CGroup: /system.slice/jenkins.service
             └─4958 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cach

Oct 17 07:09:33 ip-172-31-12-13 jenkins[4958]: 8a0c1015d8d145048d4258e5063d8ca1
Oct 17 07:09:33 ip-172-31-12-13 jenkins[4958]: This may also be found at: /var/lib/jenkins/secrets/initialAdmin
Oct 17 07:09:33 ip-172-31-12-13 jenkins[4958]: ************************************************************
Oct 17 07:09:33 ip-172-31-12-13 jenkins[4958]: ************************************************************
Oct 17 07:09:33 ip-172-31-12-13 jenkins[4958]: ************************************************************
Oct 17 07:09:56 ip-172-31-12-13 jenkins[4958]: 2024-10-17 07:09:56.871+0000 [id=29]        INFO        jenkins.
Oct 17 07:09:56 ip-172-31-12-13 jenkins[4958]: 2024-10-17 07:09:56.898+0000 [id=22]        INFO        hudson.l
Oct 17 07:09:56 ip-172-31-12-13 systemd[1]: Started Jenkins Continuous Integration Server.
Oct 17 07:10:02 ip-172-31-12-13 jenkins[4958]: 2024-10-17 07:10:02.826+0000 [id=45]        INFO        h.m.Down
Oct 17 07:10:02 ip-172-31-12-13 jenkins[4958]: 2024-10-17 07:10:02.827+0000 [id=45]        INFO        hudson.u
```

Step 7: Access Jenkins

Open your web browser.
http://your_ec2_public_dns:8080

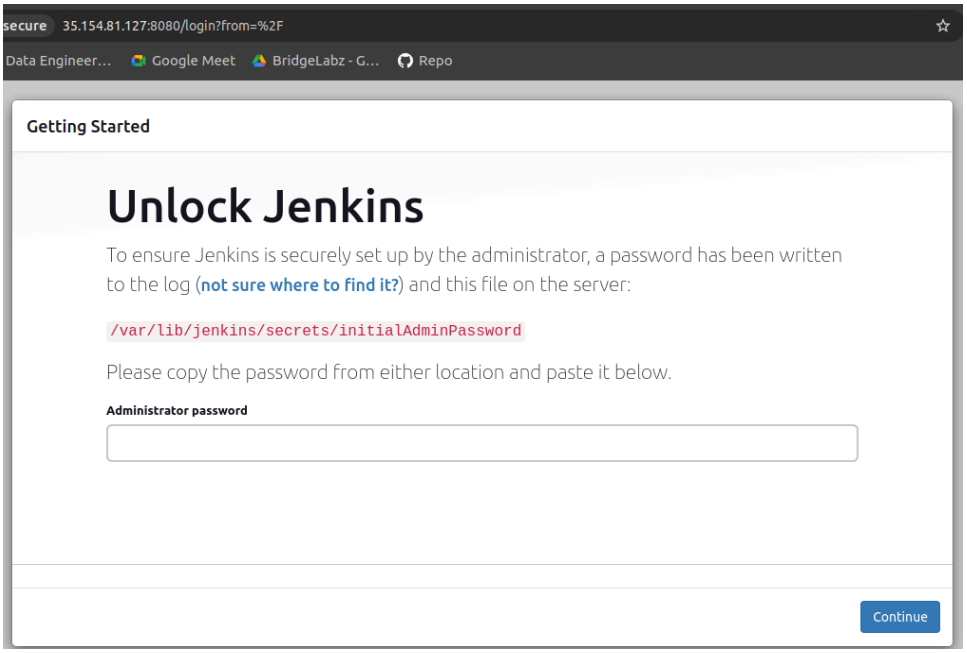
Step 8: Unlock Jenkins

Get the initial admin password:

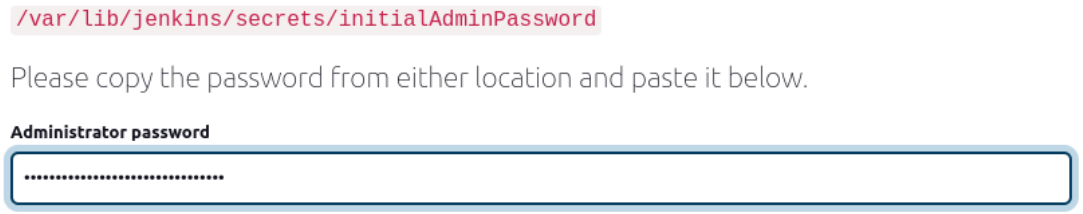
```
sudo cat /var/lib/jenkins/secrets/initialAdminPassword
```

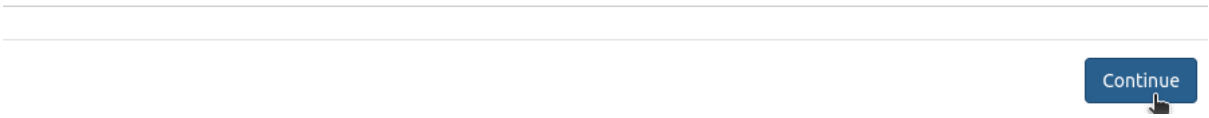
```
ubuntu@ip-172-31-12-13:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
8a0c1015d8d145048d4258e5063d8ca1
ubuntu@ip-172-31-12-13:~$
```

8a0c1015d8d145048d4258e5063d8ca1



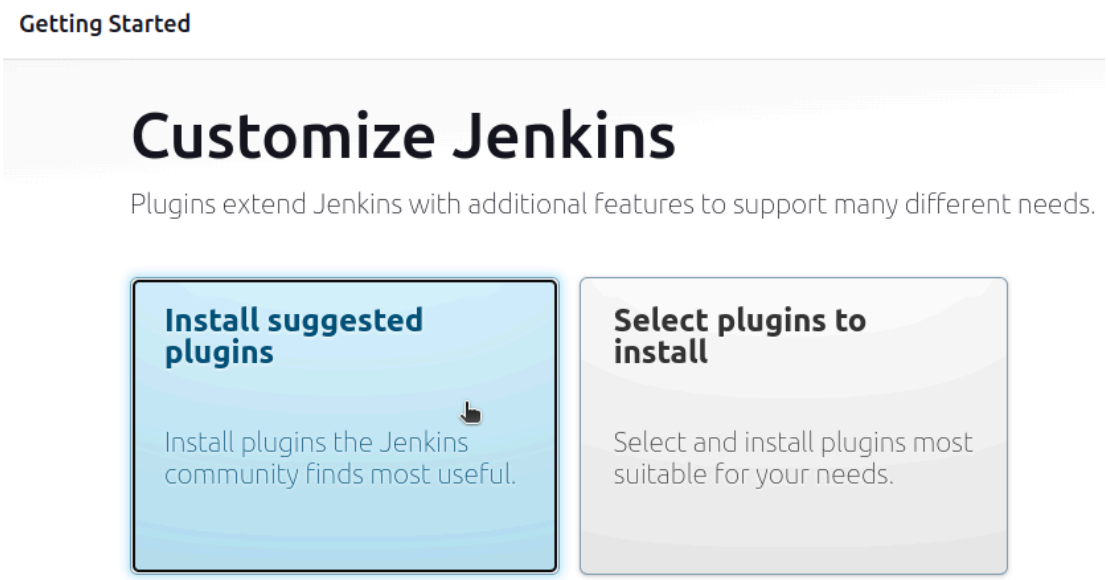
Copy the password and paste it into the Jenkins setup page.

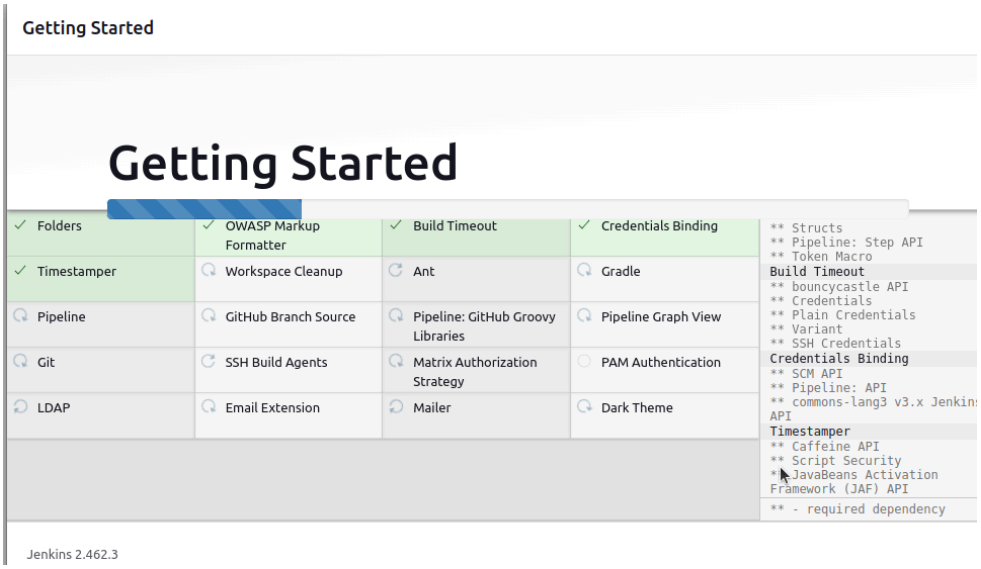




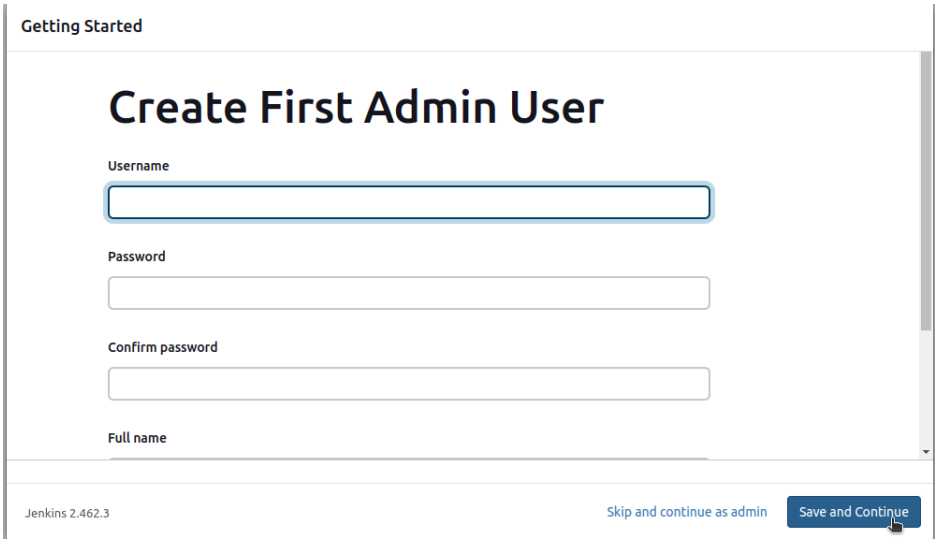
Step 9: Complete Setup

1. Follow the prompts to customize Jenkins installation. Install suggested plugins or select specific ones.

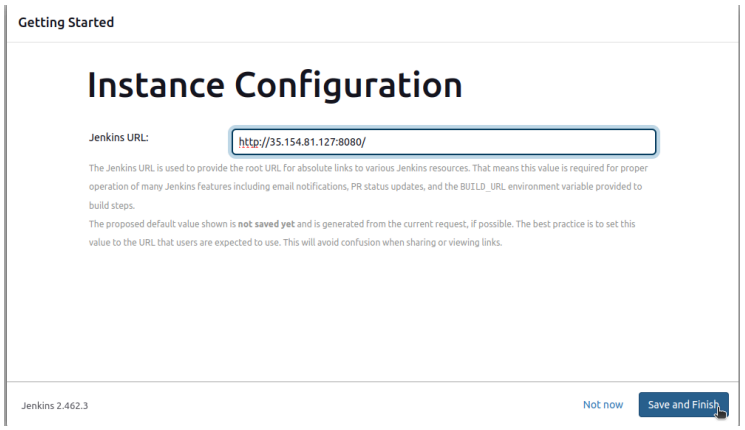


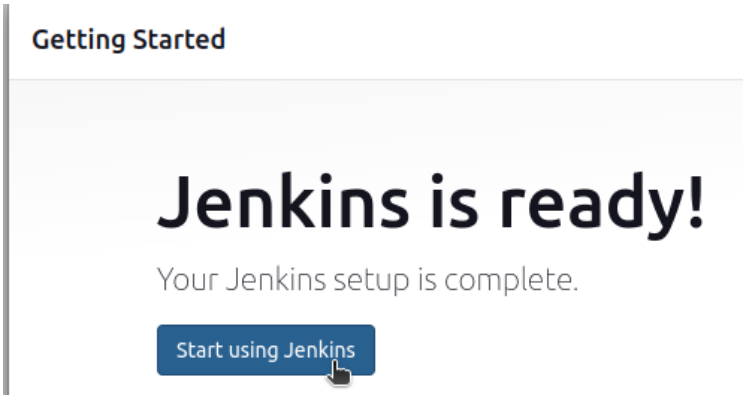


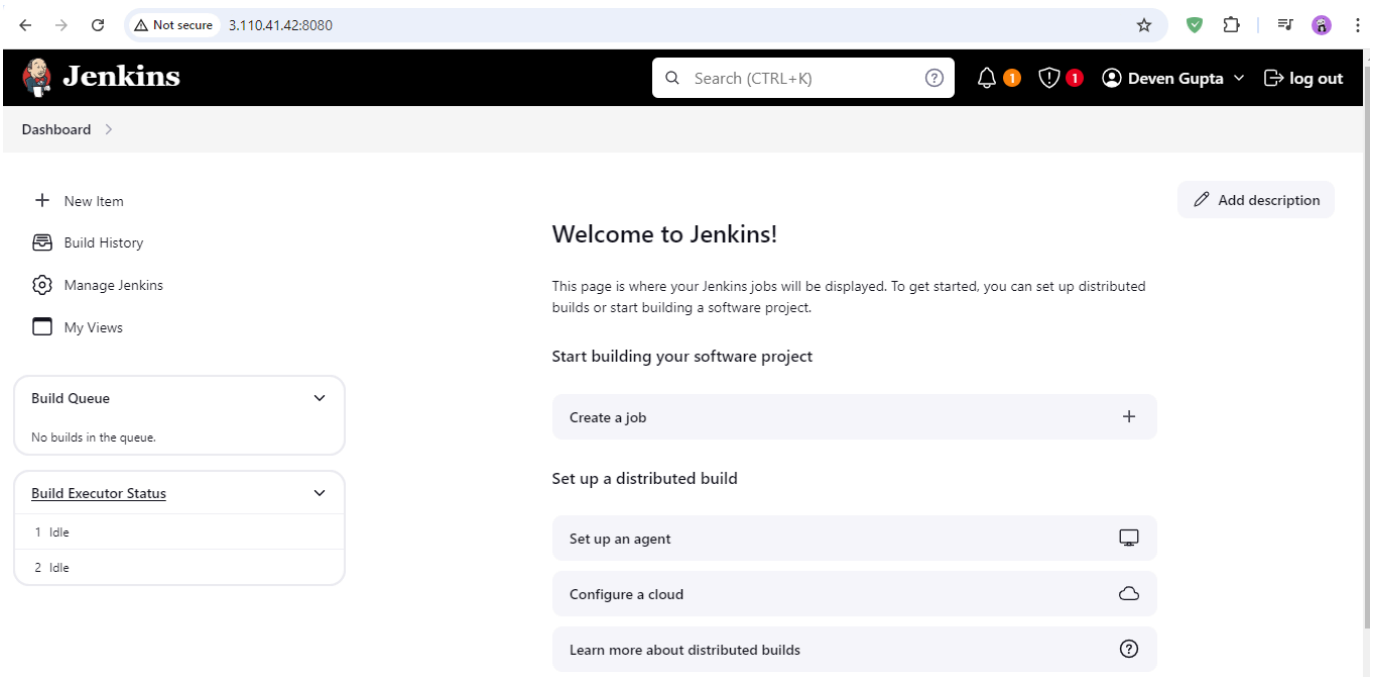
2. Create your first admin user or continue as admin.



Userid -deven5656 & pass-Deven@5656







References

Debian Jenkins Packages
Linux