Jenkins Installation

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.

Steps to Install

Create a EC2 instance

Refer this doc to create an EC2 instance and ssh into it.

Note: Configure security group settings to allow traffic on port 8080 (for Jenkins) and 22 (for SSH).

Update Package Index

sudo apt update

```
ubuntu@ip-172-31-40-129:~$ sudo apt update
Ign:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Ign:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Ign:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Ign:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Ign:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Ign:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Ign:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Ign:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Ign:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Err:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
```

Install Java

sudo apt install openjdk-11-jdk -y

```
ubuntu@ip-172-31-40-129:~$ 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
  fonts-dejavu-extra gsettings-desktop-schemas java-common liba
  libatk1.0-0 libatk1.0-data libatspi2.0-0 libavahi-client3 lib
  libdrm-nouveau2 libdrm-radeon1 libfontconfig1 libfontenc1 lib
  libglx0 libgraphite2-3 libharfbuzz0b libice-dev libice6 libjp
  libpthread-stubs0-dev libsensors-config libsensors5 libsm-dev
  libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-shape0 libxc
  libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxpm4 libxr
  libxxf86vm1 openjdk-11-jdk-headless openjdk-11-jre openjdk-11
  xtrans-dev
Suggested packages:
  default-jre libasound2-plugins alsa-utils cups-common libice
```

Verify the installation

java -version

```
ubuntu@ip-172-31-40-129:~$ java --version
openjdk 11.0.24 2024-07-16
OpenJDK Runtime Environment (build 11.0.24+8-post-Ubuntu-1ubuntu322.04)
OpenJDK 64-Bit Server VM (build 11.0.24+8-post-Ubuntu-1ubuntu322.04, mi
ubuntu@ip-172-31-40-129:~$
```

Add the GPG Key

sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \

https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key

```
ubuntu@ip-172-31-40-129:~$    sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
    https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
--2024-10-17 08:09:46--  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.a 100%[===================================================>

2024-10-17 08:09:46 (52.1 MB/s) - '/usr/share/keyrings/jenkins-keyring.asc' saved [3175/3175]

ubuntu@ip-172-31-40-129:~$
```

Add Jenkins Repository

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-172-31-40-129:~$    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-172-31-40-129:~$
```

Update Package Index Again

```
ubuntu@ip-172-31-40-129:~$ 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
Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease
Get:5 https://pkg.jenkins.io/debian-stable binary/ Release [2044 B]
Get:6 https://pkg.jenkins.io/debian-stable binary/ Release.gpg [833 B]
Get:7 https://pkg.jenkins.io/debian-stable binary/ Packages [27.9 kB]
Ign:8 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:8 http://security.ubuntu.com/ubuntu jammy-security InRelease
Fetched 30.8 kB in 1min 46s (290 B/s)
Reading package lists... Done
ubuntu@ip-172-31-40-129:~$
```

sudo apt-get install fontconfig openjdk-17-jre

```
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
0 upgraded, 1 newly installed, 0 to remove and 12 not upgraded.
Need to get 177 kB of archives.
After this operation, 384 kB 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 fon
Fetched 177 kB in 0s (8217 kB/s)
Selecting previously unselected package fontconfig.
(Reading database ... 68200 files and directories currently installed.)
Preparing to unpack .../fontconfig_2.13.1-4.2ubuntu5_amd64.deb ...
Unpacking fontconfig (2.13.1-4.2ubuntu5) ...
Setting up fontconfig (2.13.1-4.2ubuntu5) ...
Regenerating fonts cache... done.
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...
```

Install Jenkins

```
ubuntu@ip-172-31-40-129:~$ 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
Get:2 https://pkg.jenkins.io/debian-stable binary/ jenkins 2.462.3 [91.3 M
Fetched 91.5 MB in 7s (12.6 MB/s)
Selecting previously unselected package net-tools.
(Reading database ... 68230 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Selecting previously unselected package jenkins.
Preparing to unpack .../jenkins_2.462.3_all.deb ...
Unpacking jenkins (2.462.3) ...
```

Start, Enable and Check Jenkins Service

sudo systemctl enable jenkins

sudo systemctl start jenkins

sudo systemctl status jenkins

```
ubuntu@ip-172-31-40-129:~$ sudo systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /lib/systemd/systemd-
Executing: /lib/systemd/systemd-sysv-install enable jenkins
ubuntu@ip-172-31-40-129:~$ sudo systemctl start jenkins
ubuntu@ip-172-31-40-129:~$ 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 08:15:50 UTC; 1min 4s ago
   Main PID: 5261 (java)
      Tasks: 43 (limit: 1130)
     Memory: 316.9M
        CPU: 18.018s
     CGroup: /system.slice/jenkins.service
             └─5261 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.wa

Oct 17 08:15:27 ip-172-31-40-129 jenkins[5261]: 7c6c0eb980a9411fa091834bd2bbc7a9
Oct 17 08:15:27 ip-172-31-40-129 jenkins[5261]: This may also be found at: /var/lib/jenkins
Oct 17 08:15:27 ip-172-31-40-129 jenkins[5261]: ********************************************
Oct 17 08:15:27 ip-172-31-40-129 jenkins[5261]: ********************************************
Oct 17 08:15:27 ip-172-31-40-129 jenkins[5261]: ********************************************
Oct 17 08:15:50 ip-172-31-40-129 jenkins[5261]: 2024-10-17 08:15:50.704+0000 [id=29]
Oct 17 08:15:50 ip-172-31-40-129 jenkins[5261]: 2024-10-17 08:15:50.734+0000 [id=22]
```

Access Jenkins Web Interface

http://<your_instance_public_dns>:8080
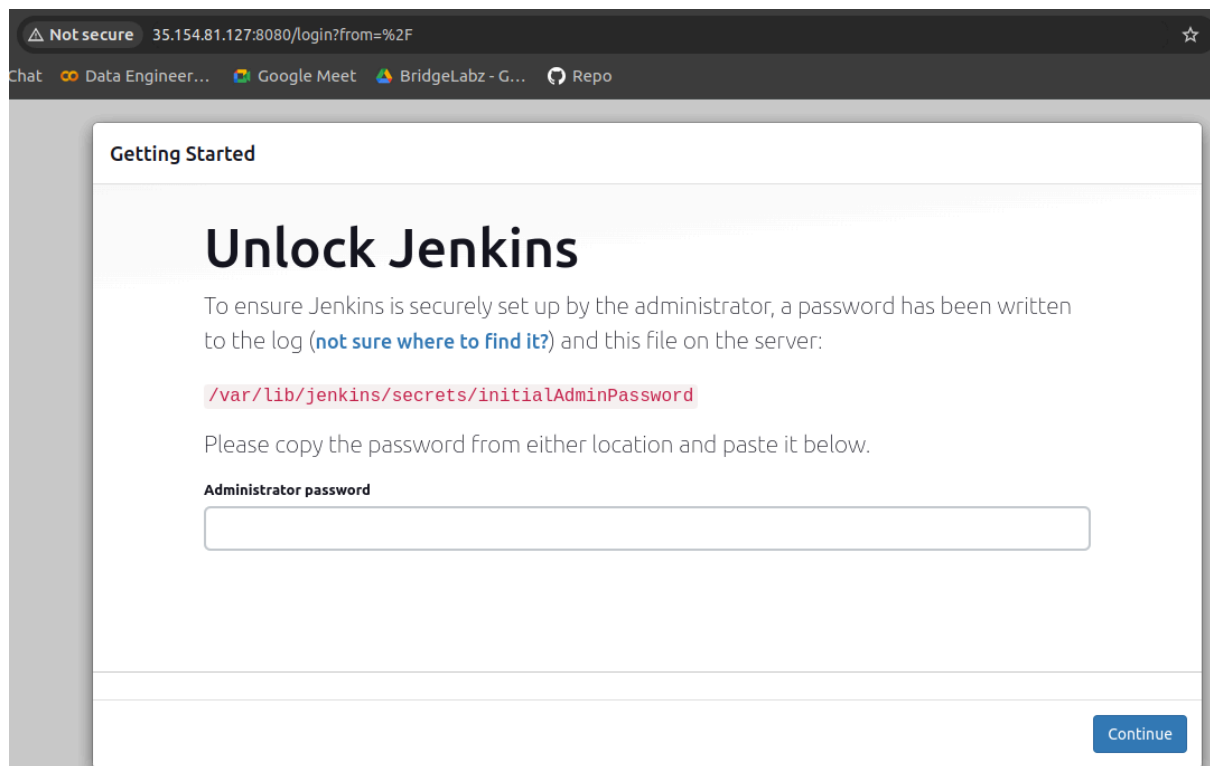
Navigate to specified directory

Copy the password from the file and paste it

Follow the prompts to install suggested plugins

Getting Started

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Getting Started

Getting Started

✓ Folders	✓ OWASP Markup Formatter	✓ Build Timeout	✓ Credentials Binding	** Structs ** Pipeline: Step API ** Token Macro
✓ Timestamper	Workspace Cleanup	Ant	Gradle	**Build Timeout** ** bouncycastle API ** Credentials
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline Graph View	** Plain Credentials ** Variant ** SSH Credentials
Git	SSH Build Agents	Matrix Authorization Strategy	PAM Authentication	**Credentials Binding** ** SCM API ** Pipeline: API
LDAP	Email Extension	Mailer	Dark Theme	** commons-lang3 v3.x Jenkins API **Timestamper** ** Caffeine API

** Script Security
* JavaBeans Activation Framework (JAF) API

** - required dependency

Jenkins 2.462.3

Create Admin user

Create your first admin user by adding necessary details

Password same as username

Set up the URL for Jenkins

Instance Configuration

Jenkins URL: http://35.154.81.127:8080/

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the BUILD_URL environment variable provided to build steps.
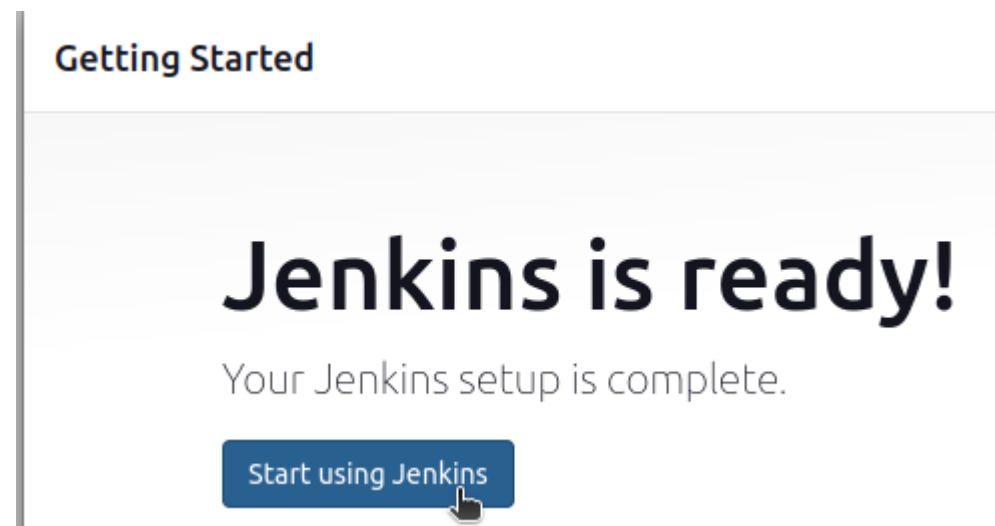
The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.462.3   Not now   Save and Finish

Getting Started

Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins

Jenkins Dashboard

Jenkins

Search (CTRL+K)

Dashboard >

+ New Item

Build History

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Add

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job   +

Reference

[Debian Jenkins Packages](#)

[Linux](#) (Preferred)