

# 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
  libfontenc1 libgif7 libgl1 libgl1-amd-glx libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0
  libjpeg-turbo8 libjpeg8 liblcms2-2 libllvm15 libpciaccess0 libpcsclite1 libpthread-stubs0-dev libensors
  libxau-dev libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-shape0
  libxcomposite1 libxdmcp-dev libxfixes3 libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxpm4 libxrandr
  libxxf86dga 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 [3175/3175]

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
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 jenkins
```

## 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/cache

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](http://your_ec2_public_dns:8080)

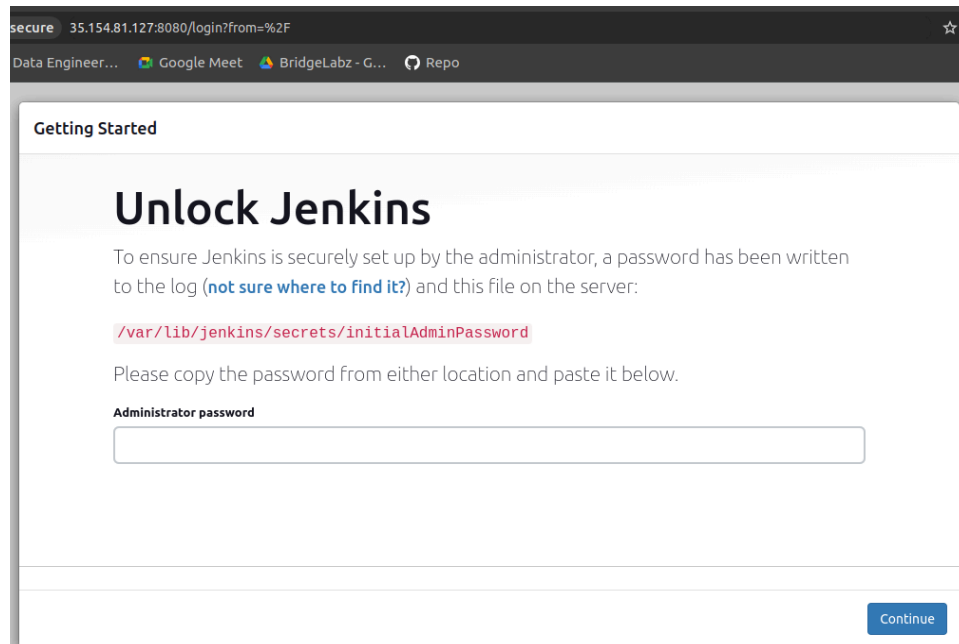
## Step 8: Unlock Jenkins

**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.

```
/var/lib/jenkins/secrets/initialAdminPassword
```

Please copy the password from either location and paste it below.

**Administrator password**

Continue

## Step 9: Complete Setup

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

# 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
✓ Timestampers	Workspace Cleanup	Ant	Gradle	** Pipeline: Step API
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline Graph View	** Token Macro
Git	SSH Build Agents	Matrix Authorization Strategy	PAM Authentication	<b>Build Timeout</b>
LDAP	Email Extension	Mailer	Dark Theme	** bouncycastle API
				** Credentials
				** Plain Credentials
				** Variant
				** SSH Credentials
				<b>Credentials Binding</b>
				** SCM API
				** Pipeline: API
				** commons-lang3 v3.x Jenkins
				API
				<b>Timestampers</b>
				** Caffeine API
				** Script Security
				** JavaBeans Activation Framework (JAF) API
				** - required dependency

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

Getting Started

## Create First Admin User

Username

Password

Confirm password

Full name

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[Skip and continue as admin](#) [Save and Continue](#)

# 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.

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Not now

Save and Finish 

## Getting Started

# Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins 

## References

[Debian Jenkins Packages](#)  
[Linux](#)