

Hello Folks ! 🙌 Wanted to share my recent learning experience 🚀 in installing Jenkins on AWS Instance and creating sample project.

It's been an incredible learning curve and I wanted to share my the steps I followed, challenges I faced and steps I took to overcome them.

1 Launch and Connect to EC2 Instance

Refer below article for step-by-step process of creating EC2 Instance.

https://www.linkedin.com/pulse/deploying-static-website-ec2-apache2-ubuntu-suraj-shrikant-khopkar-9e51f?trackingId=FrXfEdX5R1CLvQE0fRvLJg%3D%3D&lipi=urn%3Ali%3Apage%3Ad_flagship3_det ail_base%3BcBFIPbbdSTKqViqZTirmsg%3D%3D

EC2 Dashboard

EC2 Global View

Events

▼ Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

New

▼ Images

AMIs

AMI Catalog

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Volumes

Snapshots

Lifecycle Manager

▼ Network & Security

Security Groups

Elastic IPs

Placement Groups

Instances (1/2) Info

Find Instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
my-tutorial-app	i-0e46e222d3cb549d5	Terminated	t2.micro	-	No alarms +	ap-south-1a	-	-
JenkinsSampl...	i-02f42e6520fd4c30b	Running	t2.micro	Initializing	No alarms +	ap-south-1a	ec2-13-233-196-168.ap...	13.233.196.168

Instance: i-02f42e6520fd4c30b (JenkinsSampleProject)

Details Security Networking Storage Status checks Monitoring Tags

▼ Instance summary Info

Instance ID
i-02f42e6520fd4c30b (JenkinsSampleProject)

IPv6 address
-

Hostname type
IP name: ip-172-31-44-135.ap-south-1.compute.internal

Answer private resource DNS name
IPv4 (A)

Auto-assigned IP address
13.233.196.168 [Public IP]

IAM Role

Public IPv4 address
13.233.196.168 [open address]

Instance state
Running

Private IP DNS name (IPv4 only)
ip-172-31-44-135.ap-south-1.compute.internal

Instance type
t2.micro

VPC ID
vpc-025497a3238f1445e

Subnet ID

Private IPv4 addresses
172.31.44.135

Public IPv4 DNS
ec2-13-233-196-168.ap-south-1.compute.amazonaws.com [open address]

Elastic IP addresses
-

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more

Auto Scaling Group name

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See <https://ubuntu.com/esm> or run: `sudo pro status`

The list of available updates is more than a week old.
To check for new updates run: `sudo apt update`

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in `/usr/share/doc/*/copyright`.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "`sudo <command>`".
See "`man sudo_root`" for details.

`ubuntu@ip-172-31-44-135:~$`

2 Install Necessary packages

sudo apt update (Update package manager)

sudo apt install openjdk-11-jre-headless (Install Java)

3 Install Jenkins.

Now there are two ways by which we can install Jenkins on server.

First, Download jenkins installer on local machine and transfer file to server.

Second, Download jenkins directly on the server using wget command.

wget <https://get.jenkins.io/war-stable/2.426.1/jenkins.war>

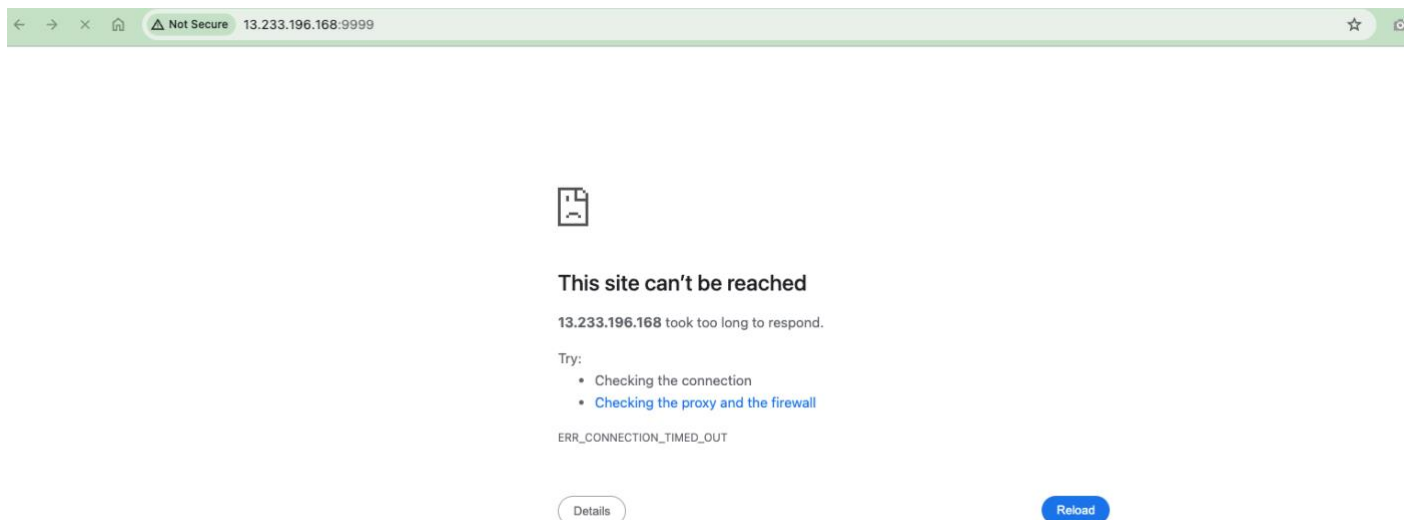
```
ubuntu@ip-172-31-44-135:~$ wget https://get.jenkins.io/war-stable/2.426.1/jenkins.war
--2023-12-01 14:11:34-- https://get.jenkins.io/war-stable/2.426.1/jenkins.war
Resolving get.jenkins.io (get.jenkins.io)... 20.7.178.24, 2603:1030:408:5::15a
Connecting to get.jenkins.io (get.jenkins.io)|20.7.178.24|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://sg.mirror.servanamanaged.com/jenkins/war-stable/2.426.1/jenkins.war [following]
--2023-12-01 14:11:35-- https://sg.mirror.servanamanaged.com/jenkins/war-stable/2.426.1/jenkins.war
Resolving sg.mirror.servanamanaged.com (sg.mirror.servanamanaged.com)... 139.144.127.39
Connecting to sg.mirror.servanamanaged.com (sg.mirror.servanamanaged.com)|139.144.127.39|:443... connect
ed.
HTTP request sent, awaiting response... 200 OK
Length: 89508920 (85M)
Saving to: 'jenkins.war'

jenkins.war          100%[=====>] 85.36M  26.4MB/s   in 3.4s

2023-12-01 14:11:39 (25.2 MB/s) - 'jenkins.war' saved [89508920/89508920]
```

4 Start Jenkins server

java -jar jenkins.war --httpPort=9999



As you can see, we are getting error while connecting. The reason is jenkins is running on the portNumber 9999 but we haven't allowed this port in the security group. Let's do that ...

Edit inbound rules [Info](#)

Inbound rules control the incoming traffic that's allowed to reach the instance.

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info	
sgr-01ee30d13020224b9	HTTP	TCP	80	Custom	<input type="text" value="Q"/> <input type="text" value=":::0"/>	<input type="button" value="Delete"/>
sgr-00ea0f2e6bbb0f98b	SSH	TCP	22	Custom	<input type="text" value="Q"/> <input type="text" value="0.0.0.0"/>	<input type="button" value="Delete"/>
sgr-0a6a203098bd40c30	Custom TCP	TCP	9999	Custom	<input type="text" value="Q"/> <input type="text" value="0.0.0.0"/>	<input type="button" value="Delete"/>

Now start Jenkins server.

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

`/home/ubuntu/.jenkins/secrets/initialAdminPassword`

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

Administrator password

For Administrator password, check the logs on the CLI.

```
Downloads — ubuntu@ip-172-31-44-135: ~ — ssh -i jenkins-sample-project.pem ubuntu@ec2-13-233-196-168.ap-south-1.compute.amazonaws.com — 104x33
apted
2023-12-01 14:25:43.625+0000 [id=28] INFO jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2023-12-01 14:25:43.626+0000 [id=28] INFO jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2023-12-01 14:25:43.769+0000 [id=28] INFO jenkins.install.SetupWizard#init:

*****
*****
*****

Jenkins initial setup is required. An admin user has been created and a password generated.
Please use the following password to proceed to installation:

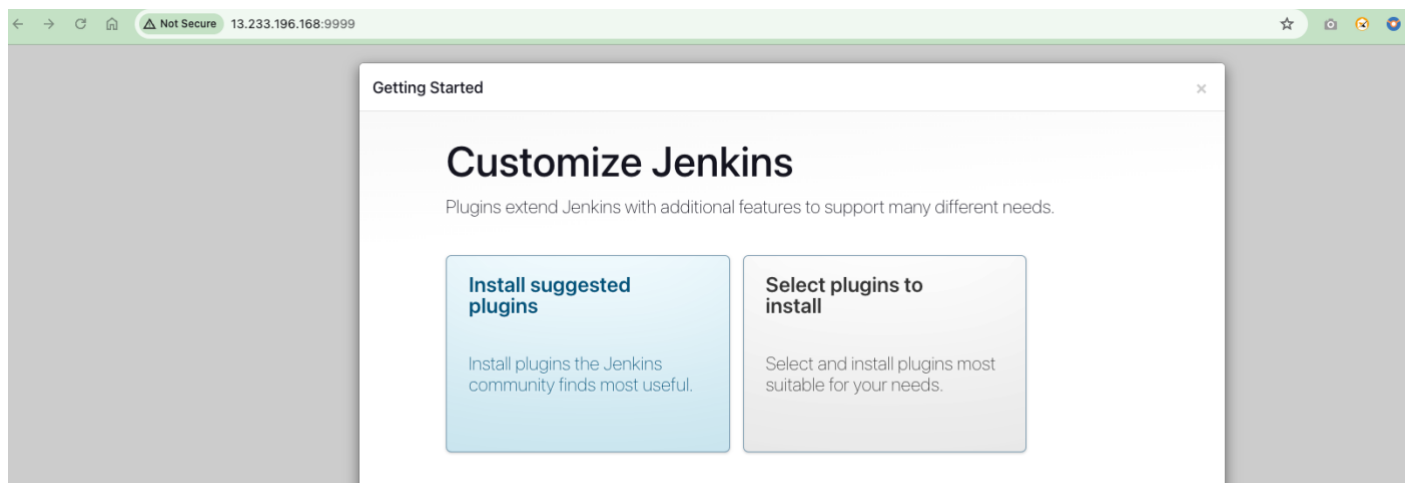
e86616fcf9964c06b57d6a58ab4d09d7

This may also be found at: /home/ubuntu/.jenkins/secrets/initialAdminPassword

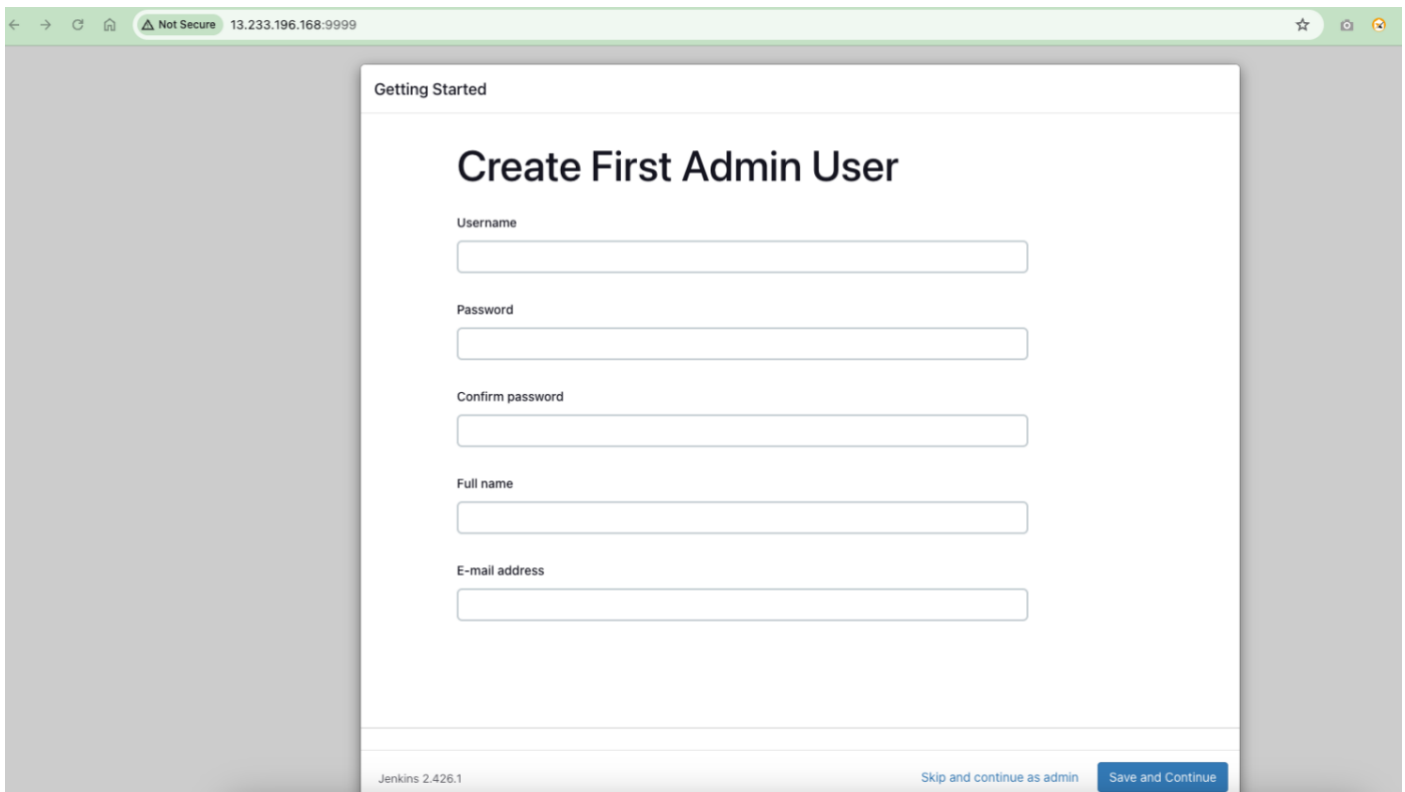
*****
*****
*****

WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.codehaus.groovy.vmplugin.v7.Java7$1 (file:/home/ubuntu/.jenkins/war/WEB-INF/lib/groovy-all-2.4.21.jar) to constructor java.lang.invoke.MethodHandles$Lookup(java.lang.Class,int)
WARNING: Please consider reporting this to the maintainers of org.codehaus.groovy.vmplugin.v7.Java7$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
2023-12-01 14:26:00.155+0000 [id=29] INFO jenkins.InitReactorRunner$1#onAttained: Completed initialization
2023-12-01 14:26:00.183+0000 [id=22] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
█
```

Enter this password and click Continue.



Install suggested plugins and wait ⌚ Since we are using free tier instance this might take some time.



A screenshot of a web browser showing the Jenkins 'Getting Started' page. The page title is 'Create First Admin User'. It contains five input fields: 'Username', 'Password', 'Confirm password', 'Full name', and 'E-mail address'. At the bottom, there are two buttons: 'Skip and continue as admin' and 'Save and Continue'. The browser's address bar shows '13.233.196.168:9999' and a 'Not Secure' warning. The Jenkins version '2.426.1' is visible in the footer.

Getting Started

Create First Admin User

Username

Password

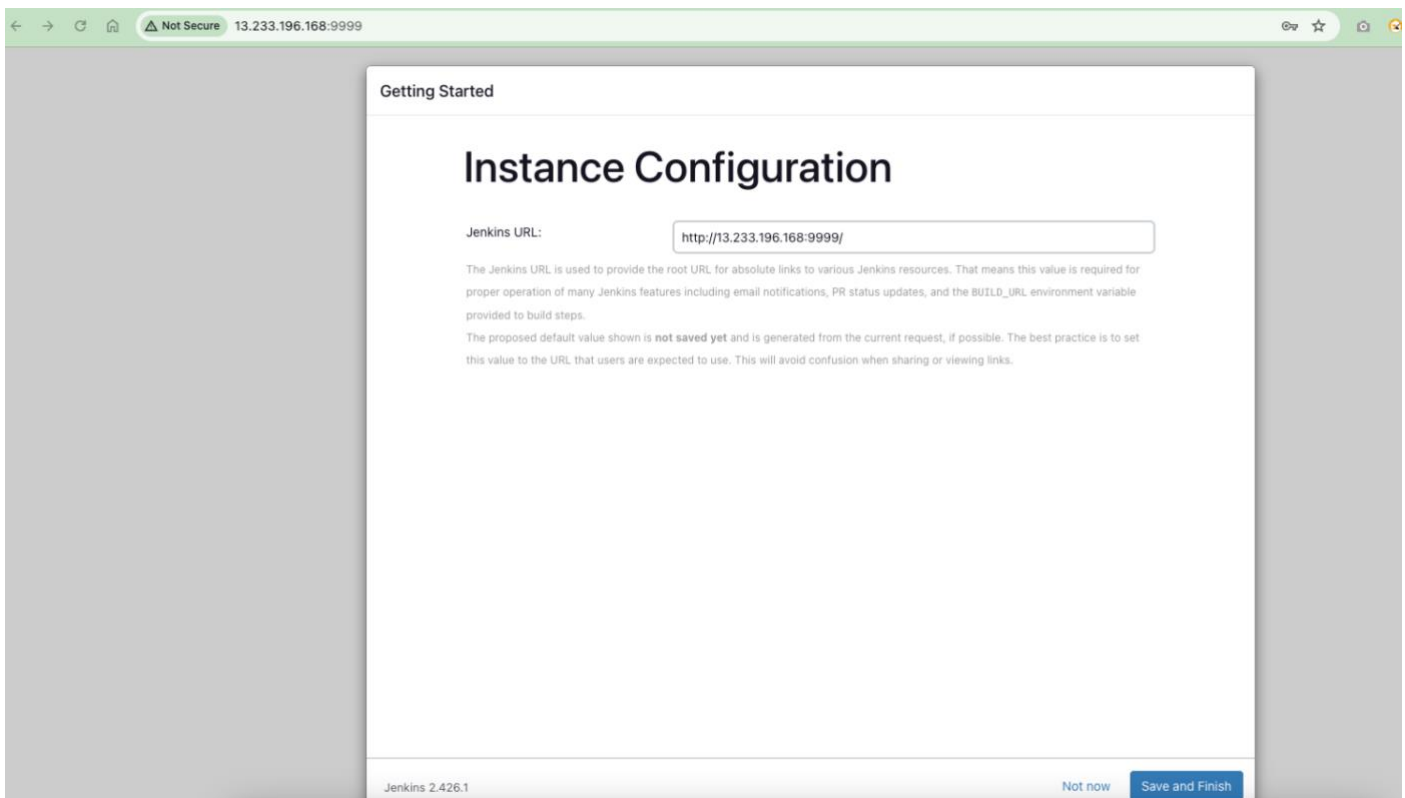
Confirm password

Full name

E-mail address

Jenkins 2.426.1 [Skip and continue as admin](#) [Save and Continue](#)

Enter details and proceed.



A screenshot of the Jenkins 'Instance Configuration' page. The page title is 'Instance Configuration'. It features a 'Jenkins URL' field with the value 'http://13.233.196.168:9999/'. Below the field, there is explanatory text about the Jenkins URL and a note that the value is not saved yet. At the bottom, there are two buttons: 'Not now' and 'Save and Finish'. The browser's address bar shows '13.233.196.168:9999' and a 'Not Secure' warning. The Jenkins version '2.426.1' is visible in the footer.

Getting Started

Instance Configuration

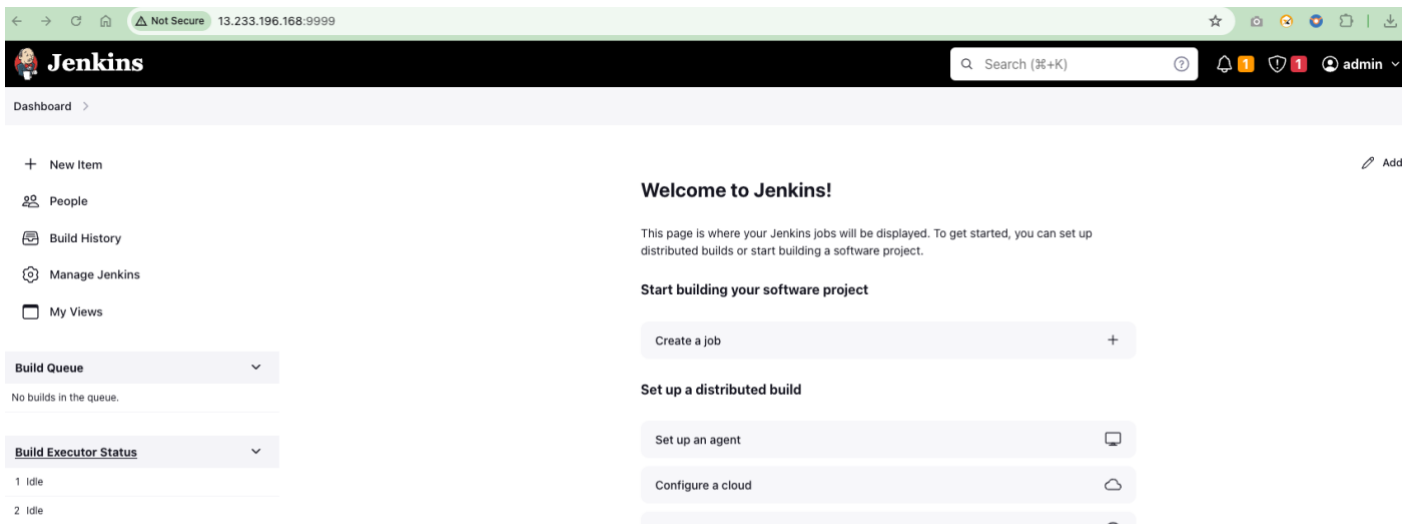
Jenkins URL:

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 2.426.1 [Not now](#) [Save and Finish](#)

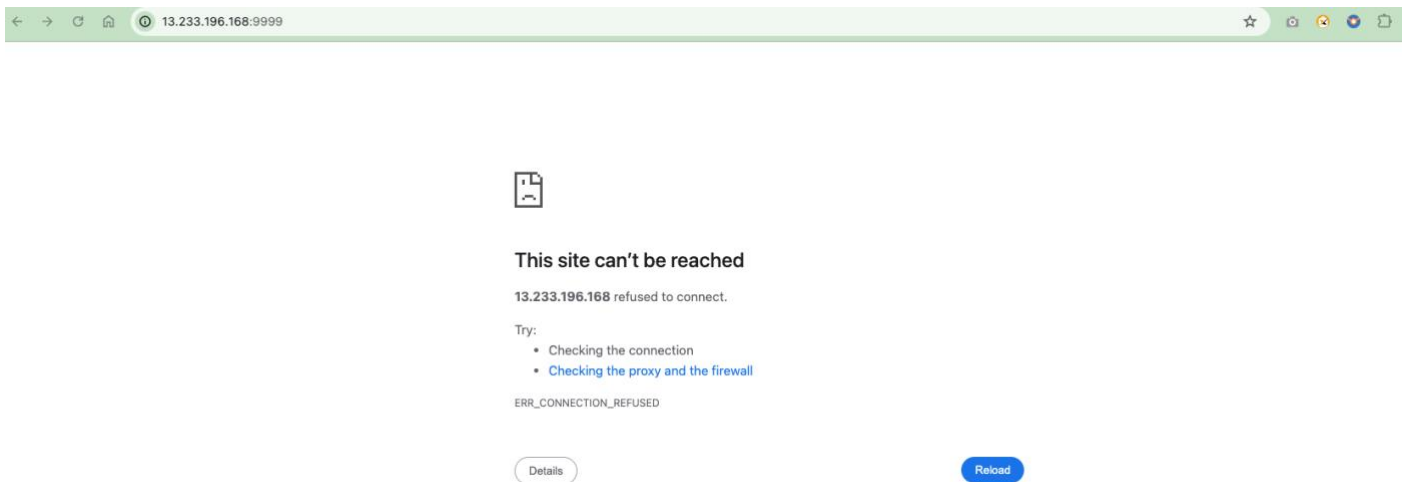
Click on Save and Finish.



Jenkins is up and running. 🏃

5 Jenkins is running but since we triggered it from CLI, it won't run as a background process. Let's try.

Exit the jenkins process on the CLI and access jenkins.




The catch here is to execute jenkins server as a background process.

- Create a file [launchJenkins.sh](#) on the EC2 server.vi [launchJenkins.sh](#)
- Add below command in the file.`java -jar jenkins.war --httpPort=9999`
- Execute sh file using nohup command to execute it as a background process.`nohup sh launchJenkins.sh &`

Press Ctrl+C and reload jenkins url.

BOOOOOM 💣

← → ↻ 🏠 🔒 Not Secure 13.233.196.168:9999 ⚙️ ☆ 📧 📱 📺 📄 📄 📄

 **Jenkins**

🔍 Search (⌘+K) ⓘ 🔔 1 🔒 1 👤 admin ▾

Dashboard >

+ New Item

👤 People

📅 Build History

⚙️ Manage Jenkins

📄 My Views

Build Queue ▾

No builds in the queue.

Build Executor Status ▾

1 Idle

2 Idle

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 +

Set up a distributed build

Set up an agent 🖥️

Configure a cloud ☁️

Learn more about distributed builds ⓘ

✎ Add

This setup is pretty straightforward and only thing to take care is to run background processes. Hope this helps. Will be back with further implementation in the next lecture.

HAPPY LEARNING 😊