

Jenkins: Lab 2

Name: Omar Khaled Gamaleldin

Part 1) Docker Agent

The Docker agent container running

```
omar@omar-khaled:~$ sudo docker run -d --rm --name=jenkins-agent-docker -p 2222:22 -e "JENKINS_AGENT_SSH_PUBKEY=$(cat ~/.ssh/jenkins_agent_key.pub)" --privileged --v /var/run/docker.sock:/var/run/docker.sock jenkins/ssh-agent:alpine-jdk21
Unable to find image 'jenkins/ssh-agent:alpine-jdk21' locally
alpine-jdk21: Pulling from jenkins/ssh-agent
9824c27679d3: Already exists
141ef3a2f86d: Pull complete
22f574c988a9: Pull complete
08830d82030f: Pull complete
8817013ed34c: Pull complete
4f4fb780ef54: Pull complete
768f5ef09022: Pull complete
1bd60d274942: Pull complete
Digest: sha256:50142f1b470607cacf5a159e041b3338132bb7089790b19e31be546aaef0538
Status: Downloaded newer image for jenkins/ssh-agent:alpine-jdk21
7f658517c0dbf43c4aef86dbada964b827db2d31f69842981550b73e7ff9add
omar@omar-khaled:~$ docker ps
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.51/containers/json": dial unix /var/run/docker.sock: connect: permis
sion denied
omar@omar-khaled:~$ sudo docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                               NAMES
7f658517c0db   jenkins/ssh-agent:alpine-jdk21     "setup-ssh"            9 seconds ago Up 8 seconds   0.0.0.0:2222->22/tcp, [::]:2222->22/tcp   jenkins-agent-docker
omar@omar-khaled:~$
```

Running the Build for the agent 1:

The screenshot shows the Jenkins web interface for a build named 'First Job on Agent 1'. The console output is visible, showing the build process for the 'docker-agent' job. The output includes the command 'docker-agent' and the message 'Finished: SUCCESS'. The build was started by user 'Omar Khaled' and is running as SYSTEM. The build is located in the workspace '/home/jenkins/workspace/First Job on Agent 1'.

Part 2) Cloud Agent

2.1: Terraform Provisioning

```
resource "aws_instance" "jenkins_agent" {
  ami = data.aws_ami.amazon_linux2023.id
  associate_public_ip_address = true
  instance_type = "t3.micro"
  key_name = aws_key_pair.lab_key.key_name
  vpc_security_group_ids = [aws_security_group.sg-jenkins.id]
  subnet_id = aws_subnet.jenkins_public_subnet.id
  tags = {
    "Name" = "jenkins-agent-instance"
  }
}
```

The instance provisioning in the main.tf.








VPC, subnet, and other resources are present in the rest of the main.tf terraform file.

2.2: Ansible Configuration

Ansible Playbook

```
1 - name: Configure Jenkins Agent
2   hosts: jenkins_agents
3   become: true
4
5   vars:
6     jenkins_user: jenkins
7
8   tasks:
9     - name: Initial Update Packages
10      ansible.builtin.dnf:
11        name: "*"
12        state: latest
13
14     - name: Install Required Packages
15      ansible.builtin.dnf:
16        name:
17          - java-21-amazon-corretto
18          - docker
19          - git
20        state: present
21
22     - name: Start Docker and enable it
23      ansible.builtin.service:
24        name: docker
25        state: started
26        enabled: true
27
28 # To separte from the root user
29 - name: Create Jenkins User
30   ansible.builtin.user:
31     name: "{{ jenkins_user }}"
32     append: true
33     groups: docker
34     shell: /bin/bash
35
36 - name: Allow jenkins user passwordless sudo
37   ansible.builtin.copy:
38     dest: /etc/sudoers.d/jenkins
39     content: "jenkins ALL=(ALL) NOPASSWD:ALL\n"
40     mode: '0440'
41
42 - name: Add ssh-key for Jenkins user to use by Jenkins Master
43   ansible.posix.authorized_key:
44     user: "{{ jenkins_user }}"
45     state: present
46     key: "{{ lookup('file', './controller_id_rsa.pub') }}"
```

Nodes:

Nodes							
S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-in Node	Linux (amd64)	In sync	36.81 GiB	5.72 GiB	36.81 GiB	0ms 
	docker-agent	Linux (amd64)	In sync	36.81 GiB	5.72 GiB	36.81 GiB	43ms 
	ec2-agent	Linux (amd64)	 15 sec ahead	N/A	 0 B	N/A	21926ms 
last checked		3 min 16 sec	3 min 15 sec	3 min 4 sec	3 min 10 sec	3 min 4 sec	3 min 12 sec

Part 3) Jenkinsfile to build and deploy sample app once in docker-agent and once in ec2-agent

```
pipeline {
  agent none

  stages {
    stage('Build on Docker Agent') {
      agent { label 'docker-agent' }
      steps {
        echo "Building app on Docker agent"
        sh 'whoami'
        sh 'hostname'

        // Example: run a build inside Docker
        sh 'docker run --rm -v $PWD:/app -w /app openjdk:17 javac HelloWorld.java'
        sh 'docker run --rm -v $PWD:/app -w /app openjdk:17 java HelloWorld'
      }
    }

    stage('Build on EC2 Agent') {
      agent { label 'ec2-agent' }
      steps {
        echo "Building app on EC2 agent"
        sh 'whoami'
        sh 'hostname'

        // Simple local build (no docker, runs directly on EC2)
        sh 'echo "public class HelloWorld { public static void main(String[] args) { System.out.println(\\\"Hello from EC2 agent!\\\"); } }" > HelloWorld.java'
        sh 'javac HelloWorld.java'
        sh 'java HelloWorld'
      }
    }
  }
}
```

Docker Stage:

```
Started by user Omar Khaled
[Pipeline] Start of Pipeline
[Pipeline] stage
[Pipeline] { (Build on Docker Agent)
[Pipeline] node
Running on docker-agent in /home/jenkins/workspace/multi-agent pipeline
[Pipeline] {
[Pipeline] echo
Building app on Docker agent
[Pipeline] sh
+ whoami
jenkins
[Pipeline] sh
+ hostname
0c289a7c33e7
[Pipeline] }
[Pipeline] // node
[Pipeline] }
[Pipeline] // stage
```

EC2 Stage

```
[Pipeline] stage
[Pipeline] { (Build on EC2 Agent)
[Pipeline] node
Still waiting to schedule task
'ec2-agent' is offline
Running on ec2-agent in /home/jenkins/agent/workspace/multi-agent pipeline
[Pipeline] {
[Pipeline] echo
Building app on EC2 agent
[Pipeline] sh
+ whoami
jenkins
[Pipeline] sh
+ hostname
ip-10-0-0-244.ec2.internal
[Pipeline] sh
+ echo 'public class HelloWorld { public static void main(String[] args) { System.out.println("Hello from EC2 agent!"); } }'
[Pipeline] sh
+ javac HelloWorld.java
[Pipeline] sh
+ java HelloWorld
Hello from EC2 agent!
[Pipeline] }
[Pipeline] // node
[Pipeline] }
[Pipeline] // stage
[Pipeline] End of Pipeline
Finished: SUCCESS
```

Part 4) Multi-Branch Build

Multi-Branch-Build

Folder name: Multi-Branch-Build
Building from Github Repo From 2 branches

Branches (2) Pull Requests (0)

S	W	Name	Last Success	Last Failure	Last Duration	F
		dev	51 sec #3	N/A	4.6 sec	
		main	25 sec #2	N/A	4.2 sec	

Icon: S M L

main branch:

Files

main

Go to file

Jenkinsfile

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Jenkins-lab2-multibranch-pipeline / Jenkinsfile

omarkhaled-19 The Jenkinsfile on Main Branch

Code Blame 11 lines (10 loc) · 150 Bytes

```
1 pipeline {
2   agent any
3   stages {
4     stage('Print Branch') {
5       steps {
6         echo "Running on branch: ${env.BRANCH_NAME}"
7       }
8     }
9   }
10 }
```

```
Cloning repository https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git
> git init /var/lib/jenkins/workspace/Multi-Branch-Build_main # timeout=10
Fetching upstream changes from https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git
> git --version # timeout=10
> git --version # 'git version 2.51.0'
using GIT_ASKPASS to set credentials Github Token for repo code checkout
> git fetch --no-tags --force --progress -- https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git +refs/heads/main:refs/remotes/origin/main # timeout=10
> git config remote.origin.url https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/main:refs/remotes/origin/main # timeout=10
Avoid second fetch
Checking out Revision a8f75d91c8813e64c1468914824ef4d173c409a9 (main)
> git config core.sparsecheckout # timeout=10
> git checkout -f a8f75d91c8813e64c1468914824ef4d173c409a9 # timeout=10
Commit message: "The Jenkinsfile on Main Branch"
> git rev-list --no-walk a8f75d91c8813e64c1468914824ef4d173c409a9 # timeout=10
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Print Branch)
[Pipeline] echo
Running on branch: main
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline

GitHub has been notified of this commit's build result

Finished: SUCCESS
```

dev branch:

Files

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Go to file t

Jenkinsfile

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omarkhaled-19 Second change ✓

Code Blame 11 lines (10 loc) · 173 Bytes

```
1 pipeline {
2   agent any
3   stages {
4     stage('Print Branch') {
5       steps {
6         echo "Running on branch dev after change again: ${env.BRANCH_NAME}"
7       }
8     }
9   }
10 }
```

```
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git # timeout=10
Fetching without tags
Fetching upstream changes from https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git
> git --version # timeout=10
> git --version # 'git version 2.51.0'
using GIT_ASKPASS to set credentials Github Token for repo code checkout
> git fetch --no-tags --force --progress -- https://github.com/omarkhaled-19/Jenkins-lab2-multibranch-pipeline.git +refs/heads/dev:refs/remotes/origin/dev # timeout=10
Checking out Revision 469d6aef1558e6c405f6943ae0b63dc7bf31be0e (dev)
> git config core.sparsecheckout # timeout=10
> git checkout -f 469d6aef1558e6c405f6943ae0b63dc7bf31be0e # timeout=10
Commit message: "Second change"
> git rev-list --no-walk ae02d91fd5937657db1f63c7ce5ac3785af8b1d4 # timeout=10
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Print Branch)
[Pipeline] echo
Running on branch dev after change again: dev
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline

GitHub has been notified of this commit's build result

Finished: SUCCESS
```

Slack Notification

#jenkins_builds

You created this channel today. This is the very beginning of the #jenkins_builds channel.

[Add description](#) [Add people to channel](#) [Send emails to channel](#)

Today ▾

Omar Khaled 20:34
joined #jenkins_builds.

Omar Khaled 20:36
added an integration to this channel: [jenkins](#)

Jenkins APP 20:44
Slack/Jenkins plugin: you're all set on <http://localhost:8080/>

Jenkins APP 21:23
Slack/Jenkins plugin: you're all set on <http://localhost:8080/>
Job 'Multi-Branch-Build/main [6]' succeeded on built-in

👍 👏 🙌 🔄 React 🗨 Reply

B *I*

Message #jenkins_builds

Files

main ▾ + 🔍

Go to file 🔍

Jenkinsfile

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Jenkins-lab2-multibranch-pipeline / Jenkinsfile 📄

omarkhaled-19 Again ✓

Code

Blame

19 lines (18 loc) · 457 Bytes

```
1 pipeline {
2   agent any
3   stages {
4     stage('Print Branch') {
5       steps {
6         echo "Running on branch: ${env.BRANCH_NAME}"
7       }
8     }
9   }
10  post {
11    success {
12      slackSend(message: "Job '${env.JOB_NAME} [${env.BUILD_NUMBER}]' succeeded on ${env.NODE_NAME}")
13    }
14    failure {
15      slackSend(message: "Job '${env.JOB_NAME} [${env.BUILD_NUMBER}]' failed. Check console output: ${env.BUILD_URL}")
16    }
17  }
18 }
```