

DevOps Project

You are hired as a DevOps engineer for Analytics Pvt Ltd. This company is a product based organization which uses Docker for their containerization needs within the company. The final product received a lot of traction in the first few weeks of launch. Now with the increasing demand, the organization needs to have a platform for automating deployment, scaling, and operations of application containers across clusters of hosts. As a DevOps engineer, you need to implement a DevOps life cycle, such that all the requirements are implemented without any change in the Docker containers in the testing environment.

Up until now, this organization used to follow a monolithic architecture with just 2 developers. The product is present on

<https://github.com/hshar/website.git>

Following are the specifications of life-cycle:

1. Git workflow should be implemented. Since the company follows monolithic architecture of Development you need to take care of version control. The release should happen only on 25th of every month.
2. Code build should be triggered once the commits are made in the master Branch.
3. The code should be containerized with the help of the Docker file, The Dockerfile should be built every time if there is a push to Git-Hub. Create a custom Docker image using a Dockerfile.
4. As per the requirement in the production server, you need to use the Kubernetes cluster and the containerized code from Docker hub should be deployed with 2 replicas. Create a NodePort service and configure the same for port 30008.

5. Create a Jenkins pipeline script to accomplish the above task.
6. For configuration management of the infrastructure, you need to deploy the configuration on the servers to install necessary software and configurations.
7. Using Terraform accomplish the task of infrastructure creation in the AWS cloud provider.

Architectural Advice

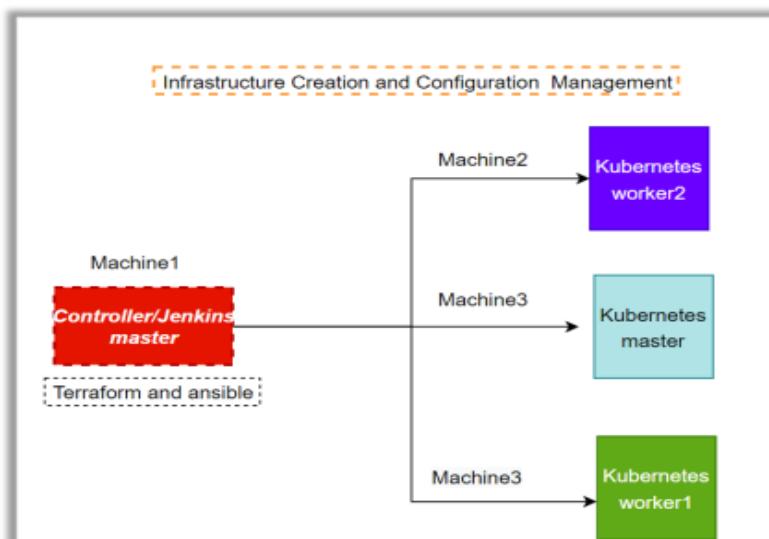
Software's to be installed on the respective machines using configuration management.

Worker1: Jenkins, Java.

Worker2: Docker, Kubernetes.

Worker3: Java, Docker, Kubernetes

Worker4: Docker, Kubernetes.



Inbox (4,239) - dyaswanthikumar | YouTube | Instances | EC2 Management Con

us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2#Instances:v=3;\$case=true%5C;client:false\$regex=tags:false%5C;client:false

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

AWS Services Search [Alt+S]

New EC2 Experience Learn more

Instances (1) Info

Find instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
Terraform	i-036fd59bb24cf9947	Running	t2.micro	Initializing	No alarms	us-east-2a

EC2 Dashboard EC2 Global View Events Limits

Instances Instances Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations

Images AMIs AMI Catalog

Elastic Block Store Volumes Snapshots

Type to search

39°C Mostly sunny 16:59 02-06-2023

The screenshot shows the AWS EC2 Instances page. A single instance named 'Terraform' is listed, which is currently running. The instance has an ID of i-036fd59bb24cf9947 and is of type t2.micro. It is in the 'Initializing' status check phase and has no alarms. The instance is located in the us-east-2a availability zone. The left sidebar shows navigation links for EC2 Dashboard, EC2 Global View, Events, Limits, Instances (with sub-links for Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations), Images (AMIs, AMI Catalog), and Elastic Block Store (Volumes, Snapshots). The bottom taskbar includes a search bar, pinned application icons, and system status indicators.

The screenshot shows a terminal window within the AWS CloudShell interface. The user is executing a shell script named `jenkins.sh` to install Jenkins on an EC2 instance. The script uses `curl` to download the Jenkins keyring and add it to the system's keyring. It then adds the Jenkins repository to /etc/apt/sources.list.d/jenkins.list and installs Jenkins using `sudo apt-get install jenkins -y`. A red arrow points to the command `sudo apt-get install jenkins -y`, indicating the step being executed.

```
GNU nano 4.8
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key | sudo tee \
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
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
sudo apt-get update
sudo apt-get install openjdk-11-jdk -y
sudo apt-get install jenkins
```

[Wrote 8 lines]

^G Get Help ^C Write Out ^W Where Is ^K Cut Text ^I Justify ^O Cur Pos ^U Undo ^A Mark Text ^J To Bracket ^Q Previous
^X Exit ^P Read File ^R Replace ^U Paste Text ^T To Spell ^L Go To Line ^D Redo ^B Copy Text ^Q Where Was ^W Next

i-036fd59bb24cf9947 (Terraform)

Public IPs: 3.145.34.137 Private IPs: 172.31.15.167

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39°C Mostly sunny 17:02 02-06-2023 ENG

The screenshot shows a Windows desktop environment with several open windows. At the top, there's a taskbar with icons for Gmail, YouTube, Connect to instance | EC2 Manager, EC2 Instance Connect, Linux, and other system icons. Below the taskbar, a browser window is open to the AWS Lambda console, showing a list of functions. A terminal window is also visible, displaying the output of an 'apt-get update' command on an Ubuntu EC2 instance. The terminal session includes commands like 'curl', 'apt', and 'sudo'. At the bottom, a system tray shows icons for battery, signal, and volume, along with the date and time (02-06-2023, 17:03). The overall interface is a mix of standard Windows elements and AWS-specific tools.

```
Get:18 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [24.9 kB]
Get:19 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [25.2 kB]
Get:20 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7408 B]
Get:21 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [612 B]
Get:22 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [45.7 kB]
Get:23 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/main Translation-en [16.3 kB]
Get:24 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [1420 B]
Get:25 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]
Get:26 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [25.0 kB]
Get:27 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [16.3 kB]
Get:28 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [880 B]
Get:29 http://us-east-2.ec2.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]
Get:30 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [2229 kB]
Get:31 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [358 kB]
Get:32 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [13.0 kB]
Get:33 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [1833 kB]
Get:34 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [256 kB]
Get:35 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [842 kB]
Get:36 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [173 kB]
Get:37 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [18.4 kB]
Get:38 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [22.9 kB]
Get:39 http://security.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5488 B]
Get:40 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [540 B]
Fetched 27.1 MB in 5s (5060 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-15-167:~$ sudo nano jenkins.sh
ubuntu@ip-172-31-15-167:~$ sudo bash jenkins.sh
```

The screenshot shows a terminal window within the AWS CloudShell interface. The terminal title is "Inbox (4,239) - dyaswanthkumar" and the tab bar includes "YouTube", "EC2 Instance Connect", "Install | Terraform | HashiCorp Dev", and others. The terminal content is a shell script titled "terraform.sh" which installs Terraform via an apt repository. The script uses wget to download the GPG key, echo to set the deb source, and sudo apt to install the package. A red checkmark icon is placed above the terminal window.

```
GNU nano 4.8
wget -O- https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o /usr/share/keyrings/hashicorp-archive-keyring.gpg
echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp-archive-keyring.list
sudo apt update && sudo apt install terraform
```

[I Wrote 3 lines]

Get Help Write Out Where Is Cut Text Justify Cur Pos Undo Mark Text To Bracket Previous
Exit Read File Replace Paste Text To Spell Go To Line Redo Copy Text Where Was Next

i-036fd59bb24cf9947 (Terraform) ✓

PublicIPs: 3.145.34.137 PrivateIPs: 172.31.15.167

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Type to search 39°C Mostly sunny 17:05 02-06-2023 ENG

The screenshot shows a Windows desktop environment with several open windows. At the top, there's a taskbar with icons for Gmail, YouTube, Connect to instance | EC2 Manager, EC2 Instance Connect, Install | Terraform | HashiCorp Dev, and others. Below the taskbar, a browser window is open to <https://us-east-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-036fd59bb24cf9947&osUser=ubuntu®ion=us-east-2&sshPort=22#/>. The main content of this window is a terminal session showing the output of an apt update and upgrade command:

```
Reading state information... Done
24 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  terraform
0 upgraded, 1 newly installed, 0 to remove and 24 not upgraded.
Need to get 21.5 MB of archives.
After this operation, 64.5 MB of additional disk space will be used.
Get:1 https://apt.releases.hashicorp.com focal/main amd64 terraform amd64 1.4.6-1 [21.5 MB]
Fetched 21.5 MB in 0s (76.1 MB/s)
Selecting previously unselected package terraform.
(Reading database ... 63777 files and directories currently installed.)
Preparing to unpack .../terraform_1.4.6-1_amd64.deb ...
Unpacking terraform (1.4.6-1) ...
Setting up terraform (1.4.6-1) ...
ubuntu@ip-172-31-15-167:~$ which jenkins ✓
/usr/bin/jenkins
ubuntu@ip-172-31-15-167:~$ java --version ✓
openjdk 11.0.19 2023-04-18
OpenJDK Runtime Environment (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-bit Server VM (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
ubuntu@ip-172-31-15-167:~$ terraform --version ✓
Terraform v1.4.6
on linux_amd64
ubuntu@ip-172-31-15-167:~$
```

Below the terminal window, there's a status bar with "i-036fd59bb24cf9947 (Terraform)" and a checkmark icon, followed by "PublicIPs: 3.145.34.137 PrivateIPs: 172.31.15.167".

At the bottom of the screen, the AWS CloudShell interface is visible, showing the AWS logo, CloudShell button, Feedback, Language dropdown, a search bar, and a toolbar with various icons. The status bar at the bottom right indicates "Near record" with a thermometer icon, the time "17:07", and the date "02-06-2023".

```
GNU nano 4.8
secret_key = "Invo1K0DMEV00n0opBf1oCnV5cPwv10gV"
}

resource "aws_instance" "example" {
  ami = "ami-0430580de6244e02e"
  count = 1
  instance_type = "t2.micro"
  key_name = "yash"
  tags = {
    Name = "kub-s"
  }
}
resource "aws_instance" "main" {
  ami = "ami-0430580de6244e02e"
  count = 1
  instance_type = "t2.micro"
  key_name = "yash"
  tags = {
    Name = "kubl-master"
  }
}

i-036fd59bb24cf9947 (Terraform)
PublicIPs: 3.145.34.137 PrivateIPs: 172.31.15.167
```

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41°C Mostly sunny 17:10
02-06-2023

Inbox (4,239) - dyaswanthkumar | YouTube | Instances | EC2 Management Con... | EC2 Instance Connect | Install | Terraform | HashiCorp D... | +

us-east-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-036fd59bb24cf9947&osUser=ubuntu®ion=us-east-2&sshPort=22#

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stora... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

AWS Services Search [Alt+S]

Terraform v1.4.6
on linux_amd64
ubuntu@ip-172-31-15-167:~\$ sudo nano main.tf ✓
ubuntu@ip-172-31-15-167:~\$ terraform init ✓

Initializing the backend...

Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v5.1.0...
- Installed hashicorp/aws v5.1.0 (signed by HashiCorp)

Terraform has created a lock file `.terraform.lock.hcl` to record the provider selections it made above. Include this file in your version control repository so that Terraform can guarantee to make the same selections by default when you run "terraform init" in the future.

Terraform has been successfully initialized! ✓

You may now begin working with Terraform. Try running "terraform plan" to see any changes that are required for your infrastructure. All Terraform commands should now work.

If you ever set or change modules or backend configuration for Terraform, rerun this command to reinitialize your working directory. If you forget, other commands will detect it and remind you to do so if necessary.

ubuntu@ip-172-31-15-167:~\$ []

i-036fd59bb24cf9947 (Terraform)
PublicIPs: 3.145.34.137 PrivateIPs: 172.31.15.167

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Type to search 41°C Mostly sunny 17:11 02-06-2023

A screenshot of a terminal window titled "Inbox (4,239) - dyawanthikumar2" in a browser tab. The terminal shows the command "terraform plan" being run on an AWS instance. The output indicates that an AWS instance resource named "aws_instance.example[0]" will be created. The plan details various configuration parameters for the instance, such as AMI, CPU type, and network settings.

```
ubuntu@ip-172-31-15-167:~$ terraform plan ✓
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.example[0] will be created
+ resource "aws_instance" "example" {
    ami                      = "ami-0430580de6244e02e"
    arn                     = (known after apply)
    associate_public_ip_address = (known after apply)
    availability_zone        = (known after apply)
    cpu_core_count           = (known after apply)
    cpu_threads_per_core     = (known after apply)
    disable_api_stop          = (known after apply)
    disable_api_termination   = (known after apply)
    ebs_optimized             = (known after apply)
    get_password_data         = false
    host_id                  = (known after apply)
    host_resource_group_arn   = (known after apply)
    iam_instance_profile      = (known after apply)
    id                       = (known after apply)
    instance_initiated_shutdown_behavior = (known after apply)
    instance_state            = (known after apply)
    instance_type              = "t2.micro"
    ipv6_address_count        = (known after apply)

i-036fd59bb24cf9947 (Terraform)
PublicIPs: 3.145.34.137 PrivatelPs: 172.31.15.167
```

The terminal window is part of a larger AWS CloudShell interface, which includes a toolbar with icons for CloudShell, Feedback, Language, and various AWS services like Lambda, S3, and CloudWatch. The status bar at the bottom shows the date (02-06-2023), time (17:12), and weather (41°C Mostly sunny).

The screenshot shows a Windows desktop environment with several open browser tabs. The active tab displays a Terraform configuration plan. The configuration includes resource blocks for public DNS, IP, security groups, subnet ID, and tags, all set to their default values. A note at the bottom states: "Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now." Below the configuration, the Terraform command "ubuntu@ip-172-31-15-167:~\$ terraform apply" is shown with a red arrow pointing to it. The terminal output shows the instance ID "i-036fd59bb24cf9947" and its Public and Private IPs.

```
+ public_dns          = (known after apply)
+ public_ip           = (known after apply)
+ secondary_private_ips = (known after apply)
+ security_groups     = (known after apply)
+ source_dest_check   = true
+ subnet_id           = (known after apply)
+ tags                = {
    + "Name" = "kubl-master"
  }
+ tags_all            = {
    + "Name" = "kubl-master"
  }
tenancy               = (known after apply)
user_data             = (known after apply)
user_data_base64      = (known after apply)
user_data_replace_on_change = false
vpc_security_group_ids = (known after apply)
```

Plan: 2 to add, 0 to change, 0 to destroy.

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

ubuntu@ip-172-31-15-167:~\$ terraform apply

i-036fd59bb24cf9947 (Terraform)
Public IPs: 3.145.34.137 Private IPs: 172.31.15.167

The screenshot shows a Windows desktop environment with several open windows:

- Top Taskbar:** Shows icons for Gmail, YouTube, Instances | EC2 Management Con..., EC2 Instance Connect, Install | Terraform | HashiCorp Do..., and a pinned profile picture for "Yaswanth Kumar Desinede...".
- Browser Tabs:** Multiple tabs are open in a browser, including "Inbox (4,239) - dyaswanthikumar2", "YouTube", "Instances | EC2 Management Con...", "EC2 Instance Connect", "Install | Terraform | HashiCorp Do...", and others related to AWS services like "How to create a Da...", "google cloud stora...", "Read AVRO messag...", "Quickstart: stream...", "Handling Avro files...", "python - Adding a...", and "Adding timestamp...".
- Terraform Terminal Window:** A terminal window titled "aws" is running Terraform commands. The output shows the creation of two AWS instances: "aws instance.main[0]" and "aws_instance.example[0]". The process takes approximately 50 seconds per instance. The final message is "Apply complete! Resources: 2 added, 0 changed, 0 destroyed." with a red checkmark icon.
- System Tray:** Shows standard icons for battery, signal, volume, and system status.

A screenshot of a Windows desktop environment showing the AWS Management Console in a browser window. The browser tabs include 'Inbox (4,239) - dyaswanthkumar', 'YouTube', 'Instances | EC2 Management Con...', 'EC2 Instance Connect', 'Install | Terraform | HashiCorp D...', and several others related to AWS services like Avro, Google Cloud Storage, and Python.

The AWS navigation bar shows 'Services' selected. The main content area displays the 'Instances' section with three running t2.micro instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
kub1-master	i-071686faa1457c0ea	Running	t2.micro	Initializing	No alarms	us-east-2a
kub-s	i-000a08083e3773a22	Running	t2.micro	Initializing	No alarms	us-east-2a
Terraform	i-036fd59bb24cf9947	Running	t2.micro	2/2 checks passed	No alarms	us-east-2a

A modal dialog titled 'Select an instance' is open, indicating that one instance needs to be chosen for further action. The taskbar at the bottom shows various pinned icons and the system tray displays the date and time as 02-06-2023, 17:17.

The screenshot shows a Windows desktop environment with several open windows. At the top, there's a taskbar with icons for Mail, Instances | EC2 Management, EC2 Instance Connect, EC2 Instance Connect, Install | Terraform | HashiCorp, and others. Below the taskbar, a browser window is open with the URL `us-east-2.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-2&connType=standard&instanceId=i-071686faa1457c0ea&osUser=ubuntu&sshPort=22#/`. The main content of the browser shows a terminal session on an AWS Lambda instance. The terminal output is as follows:

```
Adding debian:BuyPass Class_2_Root_CA.pem
Adding debian:AffirmTrust_Commercial.pem
Adding debian:ePKI_Root_Certification_Authority.pem
Adding debian:DigiCert_Global_Root_G2.pem
Adding debian:Autoridad_de_Certificacion_Firmprofesional_CIF_A62634068.pem
Adding debian:USERTRUST_ECC_Certification_Authority.pem
Adding debian:Hongkong_Post_Root_CA_3.pem
Adding debian:GlobalSign_Root_CA__R3.pem
Adding debian:GlobalSign_Root_CA__R6.pem
Adding debian:Comodo AAA_Services_root.pem
done.

Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Processing triggers for systemd (245.4-4ubuntu3.21) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ca-certificates (20211016ubuntu0.20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.

Running hooks in /etc/ca-certificates/update.d...

done.
done.
ubuntu@ip-172-31-7-239:~$ java --version
openjdk 11.0.19 2023-04-18
OpenJDK Runtime Environment (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-Bit Server VM (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
ubuntu@ip-172-31-7-239:~$
```

At the bottom of the terminal window, there is a status bar with the text "i-071686faa1457c0ea (kub1-master) ✓". Below the terminal window, the system tray shows icons for CloudShell, Feedback, Language, a search bar, and various system icons like battery, signal, and network. The status bar also displays "Public IPs: 13.58.119.79 Private IPs: 172.31.7.239", the date "02-06-2023", the time "17:26", and the weather "41°C Mostly sunny".

The screenshot shows a browser window with multiple tabs open. The main content area displays terminal output from an EC2 instance. The output includes:

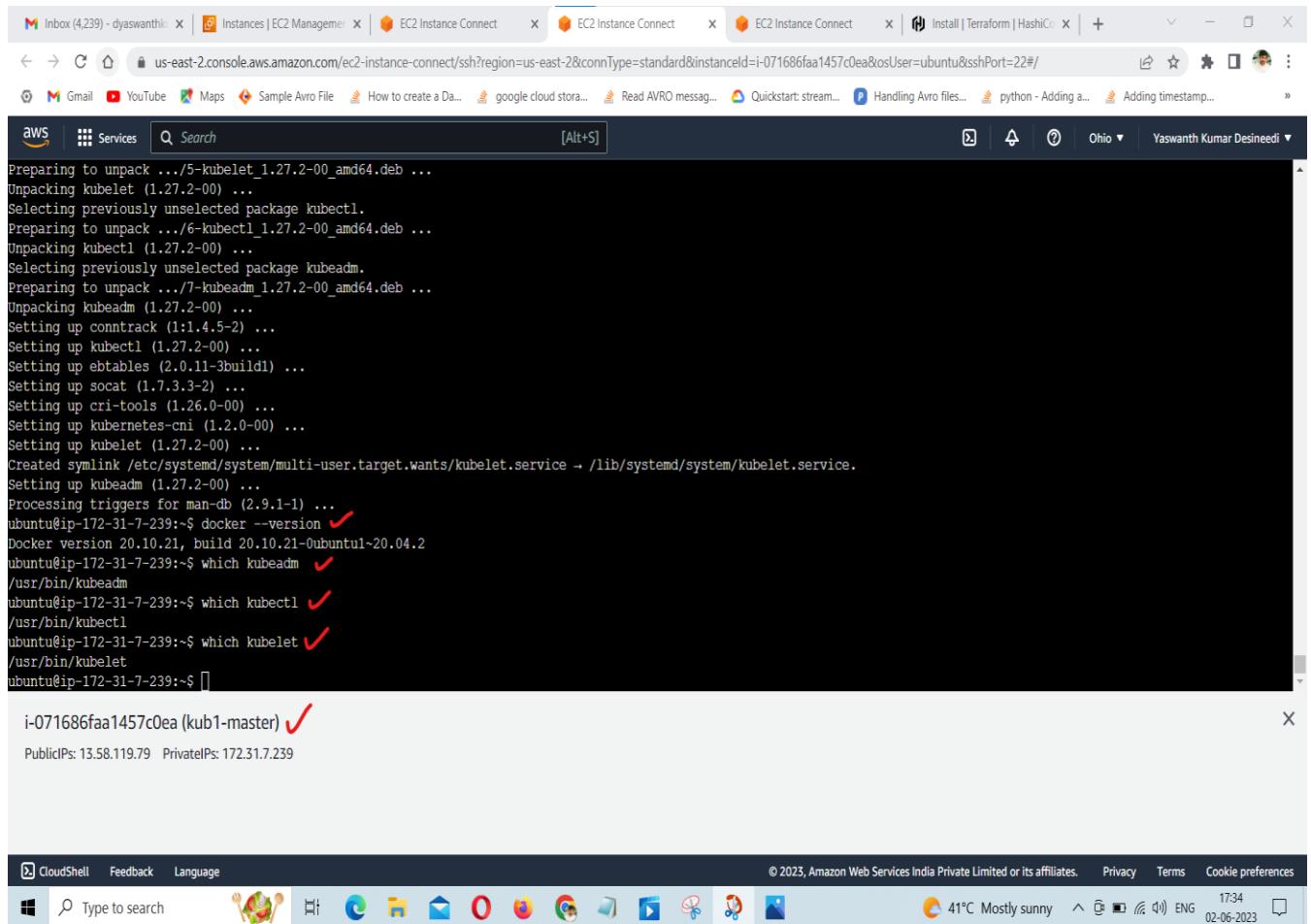
```
Adding debian:Bypass_Class_2_Root_CA.pem
Adding debian:AffirmTrust_Commercial.pem
Adding debian:ePKI Root Certification Authority.pem
Adding debian:DigiCert_Global_Root_G2.pem
Adding debian: Autoridad_de_Certificacion_Firmaprofesional_CIF_A62634068.pem
Adding debian:USERTrust_ECC_Certification_Authority.pem
Adding debian:Hongkong_Post_Root_CA_3.pem
Adding debian:GlobalSign_Root_CA_-R3.pem
Adding debian:GlobalSign_Root_CA_-R6.pem
Adding debian:Comodo_AAA_Services_root.pem
done.

Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Processing triggers for systemd (245.4-4ubuntu3.21) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ca-certificates (20211016ubuntu0.20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...

done.
done.
ubuntu@ip-172-31-4-10:~$ java --version ✓
openjdk 11.0.19 2023-04-18
OpenJDK Runtime Environment (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-Bit Server VM (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
ubuntu@ip-172-31-4-10:~$ [
```

Below the terminal output, there is a section labeled "i-000a08083e3773a22 (kub-s)" with a red checkmark. It shows PublicIPs: 3.145.76.60 and PrivateIPs: 172.31.4.10.

The bottom of the screen shows the AWS CloudShell interface with various icons for file operations, search, and system status. The status bar indicates it's 41°C, Mostly sunny, and the date is 02-06-2023.



```
Preparing to unpack .../5-kubelet_1.27.2-00_amd64.deb ...
Unpacking kubelet (1.27.2-00) ...
Selecting previously unselected package kubectl.
Preparing to unpack .../6-kubectl_1.27.2-00_amd64.deb ...
Unpacking kubectl (1.27.2-00) ...
Selecting previously unselected package kubeadm.
Preparing to unpack .../7-kubeadm_1.27.2-00_amd64.deb ...
Unpacking kubeadm (1.27.2-00) ...
Setting up conntrack (1:1.4.5-2) ...
Setting up kubectl (1.27.2-00) ...
Setting up ebtables (2.0.11-3build1) ...
Setting up socat (1.7.3.3-2) ...
Setting up cri-tools (1.26.0-00) ...
Setting up kubernetes-cni (1.2.0-00) ...
Setting up kubelet (1.27.2-00) ...
Created symlink /etc/systemd/system/multi-user.target.wants/kubelet.service → /lib/systemd/system/kubelet.service.
Setting up kubeadm (1.27.2-00) ...
Processing triggers for man-db (2.9.1-1) ...
ubuntu@ip-172-31-7-239:~$ docker --version ✓
Docker version 20.10.21, build 20.10.21-0ubuntu1~20.04.2
ubuntu@ip-172-31-7-239:~$ which kubeadm ✓
/usr/bin/kubeadm
ubuntu@ip-172-31-7-239:~$ which kubectl ✓
/usr/bin/kubectl
ubuntu@ip-172-31-7-239:~$ which kubelet ✓
/usr/bin/kubelet
ubuntu@ip-172-31-7-239:~$ [ ] ✓
```

i-071686faa1457c0ea (kub1-master) ✓

PublicIPs: 13.58.119.79 PrivateIPs: 172.31.7.239

The screenshot shows a CloudShell terminal window with the following content:

```
Preparing to unpack .../5-kubelet_1.27.2-00_amd64.deb ...
Unpacking kubelet (1.27.2-00) ...
Selecting previously unselected package kubectl.
Preparing to unpack .../6-kubectl_1.27.2-00_amd64.deb ...
Unpacking kubectl (1.27.2-00) ...
Selecting previously unselected package kubeadm.
Preparing to unpack .../7-kubeadm_1.27.2-00_amd64.deb ...
Unpacking kubeadm (1.27.2-00) ...
Setting up conntrack (1:1.4.5-2) ...
Setting up kubectl (1.27.2-00) ...
Setting up ebtables (2.0.11-3build1) ...
Setting up socat (1.7.3-3-2) ...
Setting up cri-tools (1.26.0-00) ...
Setting up kubernetes-cni (1.2.0-00) ...
Setting up kubelet (1.27.2-00) ...
Created symlink /etc/systemd/system/multi-user.target.wants/kubelet.service → /lib/systemd/system/kubelet.service.
Setting up kubeadm (1.27.2-00) ...
Processing triggers for man-db (2.9.1-1) ...
ubuntu@ip-172-31-4-10:~$ docker --version ✓
Docker version 20.10.21, build 20.10.21-0ubuntu1~20.04.2
ubuntu@ip-172-31-4-10:~$ which kubeadm ✓
/usr/bin/kubeadm
ubuntu@ip-172-31-4-10:~$ which kubectl ✓
/usr/bin/kubectl
ubuntu@ip-172-31-4-10:~$ which kubelet ✓
/usr/bin/kubelet
ubuntu@ip-172-31-4-10:~$ [ ]
```

At the bottom of the terminal, there is a red checkmark next to the command `i-000a08083e3773a22 (kub-s)`.

Below the terminal, the CloudShell header includes:

- CloudShell
- Feedback
- Language
- Type to search
- CloudShell icon
- File icon
- Open icon
- Send icon
- Copy icon
- Find icon
- Open icon

On the right side of the header, there are status indicators for weather (41°C Mostly sunny), time (17:35), language (ENG), and date (02-06-2023).

Inbox (4,239) - dyaswanthk | Instances | EC2 Management | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | Install | Terraform | HashiCo | + | - | X

← → C ⌂ 🔒 us-east-2.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-2&connType=standard&instanceId=i-071686faa1457c0ea&osUser=ubuntu&sshPort=22#/

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stora... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

Services Search [Alt+S]

Preparing to unpack .../6-kubectl_1.27.2-00_amd64.deb ...
Unpacking kubectl (1.27.2-00) ...
Selecting previously unselected package kubeadm.
Preparing to unpack .../7-kubeadm_1.27.2-00_amd64.deb ...
Unpacking kubeadm (1.27.2-00) ...
Setting up comctrack (1:1.4.5-2) ...
Setting up kubectl (1.27.2-00) ...
Setting up ebtables (2.0.11-3build1) ...
Setting up socat (1.7.3.3-2) ...
Setting up cri-tools (1.26.0-00) ...
Setting up kubernetes-cni (1.2.0-00) ...
Setting up kubelet (1.27.2-00) ...
Created symlink /etc/systemd/system/multi-user.target.wants/kubelet.service → /lib/systemd/system/kubelet.service.
Setting up kubeadm (1.27.2-00) ...
Processing triggers for man-db (2.9.1-1) ...
ubuntu@ip-172-31-7-239:~\$ docker --version
Docker version 20.10.21, build 20.10.21-0ubuntu1~20.04.2
ubuntu@ip-172-31-7-239:~\$ which kubeadm
/usr/bin/kubeadm
ubuntu@ip-172-31-7-239:~\$ which kubectl
/usr/bin/kubectl
ubuntu@ip-172-31-7-239:~\$ which kubelet
/usr/bin/kubelet
ubuntu@ip-172-31-7-239:~\$ sudo su
root@ip-172-31-7-239:/home/ubuntu# hostnamectl set-hostname master
root@ip-172-31-7-239:/home/ubuntu# exec bash
root@master:/home/ubuntu# kubeadm init[]

i-071686faa1457c0ea (kub1-master)

PublicIPs: 13.58.119.79 PrivateIPs: 172.31.7.239

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Windows Type to search 41°C Mostly sunny 17:38 02-06-2023

In the terminal window, the user is performing a kubeadm setup on an EC2 instance. The session starts with unpacking kubectl and kubeadm packages, followed by setting up various system components like conntrack, ebtables, socat, cri-tools, and kubernetes-cni. It then creates a symlink for kubelet and sets up triggers. The user logs in as root and changes the host name to 'worker'. Finally, they switch to a bash shell.

```
Preparing to unpack .../6-kubectl_1.27.2-00_amd64.deb ...
Unpacking kubectl (1.27.2-00) ...
Selecting previously unselected package kubeadm.
Preparing to unpack .../7-kubeadm_1.27.2-00_amd64.deb ...
Unpacking kubeadm (1.27.2-00) ...
Setting up conntrack (1:1.4.5-2) ...
Setting up ebtables (2.0.11-3build1) ...
Setting up socat (1.7.3.3-2) ...
Setting up cri-tools (1.26.0-00) ...
Setting up kubernetes-cni (1.2.0-00) ...
Setting up kubelet (1.27.2-00) ...
Created symlink /etc/systemd/system/multi-user.target.wants/kubelet.service → /lib/systemd/system/kubelet.service.
Setting up kubeadm (1.27.2-00) ...
Processing triggers for man-db (2.9.1-1) ...
ubuntu@ip-172-31-4-10:~$ docker --version
Docker version 20.10.21, build 20.10.21-0ubuntu1~20.04.2
ubuntu@ip-172-31-4-10:~$ which kubeadm
/usr/bin/kubeadm
ubuntu@ip-172-31-4-10:~$ which kubectl
/usr/bin/kubectl
ubuntu@ip-172-31-4-10:~$ which kubelet
/usr/bin/kubelet
ubuntu@ip-172-31-4-10:~$ sudo su ✓
root@ip-172-31-4-10:/home/ubuntu# hostnamectl set-hostname worker ✓
root@ip-172-31-4-10:/home/ubuntu# exec bash ✓
root@worker:/home/ubuntu# ✓
```

i-000a08083e3773a22 (kub-s) ✓

Public IPs: 3.145.76.60 Private IPs: 172.31.4.10

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41°C Mostly sunny 17:39 02-06-2023

```
mkdir -p $HOME/.kube
sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
sudo chown $(id -u):$(id -g) $HOME/.kube/config

Alternatively, if you are the root user, you can run:

export KUBECONFIG=/etc/kubernetes/admin.conf

You should now deploy a pod network to the cluster.
Run "kubectl apply -f [podnetwork].yaml" with one of the options listed at:
https://kubernetes.io/docs/concepts/cluster-administration/addons/

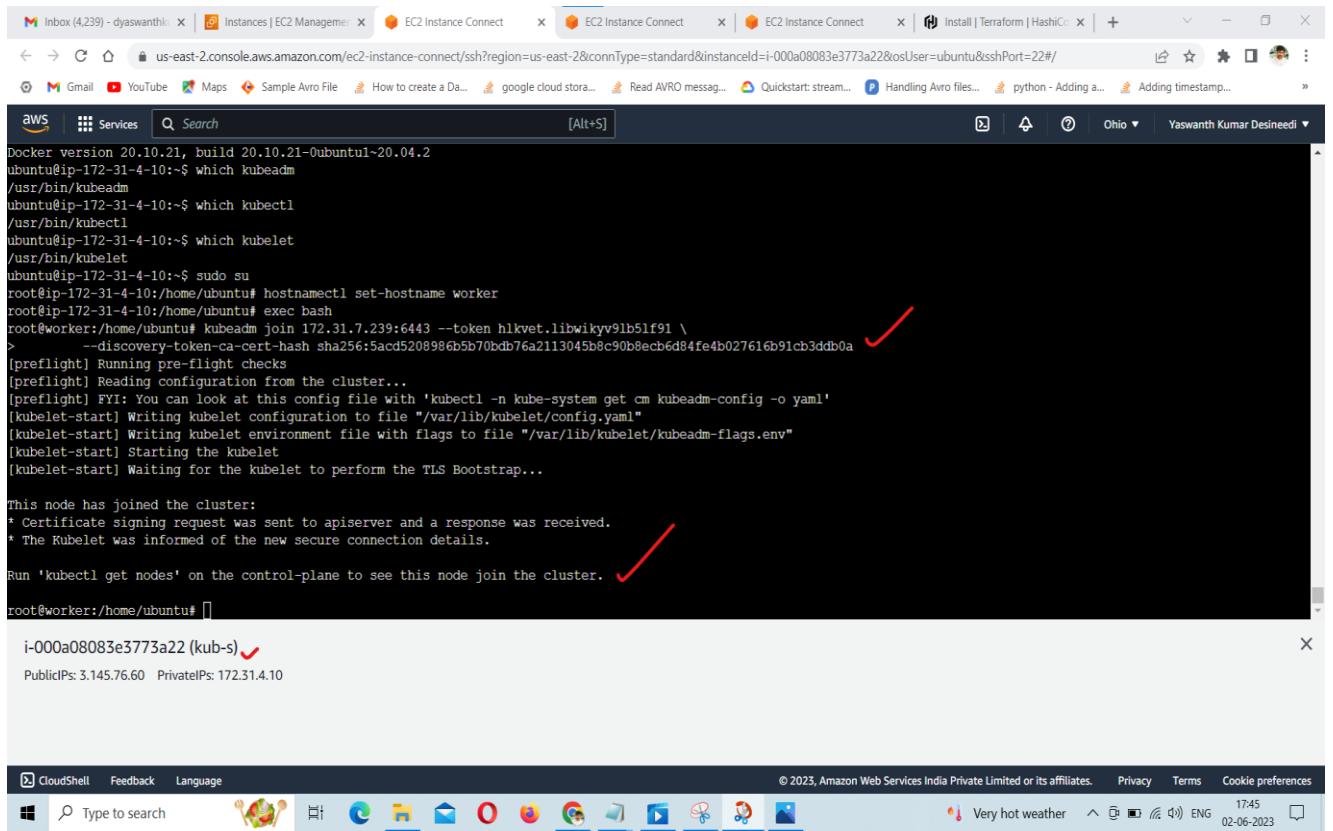
Then you can join any number of worker nodes by running the following on each as root:

kubeadm join 172.31.7.239:6443 --token hlkvet.libwikyv9lb5lf91 \
    --discovery-token-ca-cert-hash sha256:5acd5208906b5b70bdb76a2113045b8c90b8ecb6d84fe4b027616b91cb3ddb0a ✓
root@master:/home/ubuntu# mkdir -p $HOME/.kube ✓
root@master:/home/ubuntu# sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config ✓
root@master:/home/ubuntu# sudo chown $(id -u):$(id -g) $HOME/.kube/config ✓
root@master:/home/ubuntu# kubectl apply -f https://github.com/weaveworks/weave/releases/download/v2.8.1/weave-daemonset-k8s.yaml ✓
serviceaccount/weave-net created
clusterrole.rbac.authorization.k8s.io/weave-net created
clusterrolebinding.rbac.authorization.k8s.io/weave-net created
role.rbac.authorization.k8s.io/weave-net created
rolebinding.rbac.authorization.k8s.io/weave-net created
daemonset.apps/weave-net created
root@master:/home/ubuntu# ✓

i-071686faa1457c0ea (kub1-master) ✓
PublicIPs: 13.58.119.79 PrivateIPs: 172.31.7.239
```

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Windows Type to search 40°C Partly sunny 17:43 ENG 02-06-2023



```
Docker version 20.10.21, build 20.10.21-0ubuntu1~20.04.2
ubuntu@ip-172-31-4-10:~$ which kubeadm
/usr/bin/kubeadm
ubuntu@ip-172-31-4-10:~$ which kubectl
/usr/bin/kubectl
ubuntu@ip-172-31-4-10:~$ which kubelet
/usr/bin/kubelet
ubuntu@ip-172-31-4-10:~$ sudo su
root@ip-172-31-4-10:/home/ubuntu# hostnamectl set-hostname worker
root@ip-172-31-4-10:/home/ubuntu# exec bash
root@worker:/home/ubuntu# kubeadm join 172.31.7.239:6443 --token hlkvet.libwikvv9lb5lf91 \
--discovery-token-ca-cert-hash sha256:5acd5208986b5b70bdb76a2113045b8c90b8ecb6d84fe4b027616b91cb3ddb0a
[preflight] Running pre-flight checks
[preflight] Reading configuration from the cluster...
[preflight] FYI: You can look at this config file with 'kubectl -n kube-system get cm kubeadm-config -o yaml'
[kubelet-start] Writing kubelet configuration to file "/var/lib/kubelet/config.yaml"
[kubelet-start] Writing kubelet environment file with flags to file "/var/lib/kubelet/kubeadm-flags.env"
[kubelet-start] Starting the kubelet
[kubelet-start] Waiting for the kubelet to perform the TLS Bootstrap...

This node has joined the cluster:
* Certificate signing request was sent to apiserver and a response was received.
* The Kubelet was informed of the new secure connection details.

Run 'kubectl get nodes' on the control-plane to see this node join the cluster.
```

i-000a08083e3773a22 (kub-s) ✓
PublicIPs: 3.145.76.60 PrivateIPs: 172.31.4.10

The screenshot shows a Windows desktop environment with several open windows. At the top, there's a taskbar with icons for Gmail, YouTube, Maps, Sample Avro File, How to create a Da..., google cloud stor..., Read AVRO messag..., Quickstart: stream..., Handling Avro files..., python - Adding a..., Adding timestamp..., and Adding timestamp... . Below the taskbar, the Start menu is open, showing categories like Home, Work, Play, and Settings.

The main area of the screen displays a terminal window titled "EC2 Instance Connect" which is connected to an EC2 instance. The terminal output is as follows:

```
export KUBECONFIG=/etc/kubernetes/admin.conf

You should now deploy a pod network to the cluster.
Run "kubectl apply -f [podnetwork].yaml" with one of the options listed at:
  https://kubernetes.io/docs/concepts/cluster-administration/addons/

Then you can join any number of worker nodes by running the following on each as root:

kubeadm join 172.31.7.239:6443 --token hlkvet.libwikyv9lb5lf91 \
    --discovery-token-ca-cert-hash sha256:5acd5208986b5b70bdb76a2113045b8c90b8ecb6d84fe4b027616b91cb3ddb0a
root@master:/home/ubuntu# mkdir -p $HOME/.kube
root@master:/home/ubuntu# sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
root@master:/home/ubuntu# sudo chown $(id -u):$(id -g) $HOME/.kube/config
root@master:/home/ubuntu# kubectl apply -f https://github.com/weaveworks/weave/releases/download/v2.8.1/weave-daemonset-k8s.yaml
serviceaccount/weave-net created
clusterrole.rbac.authorization.k8s.io/weave-net created
clusterrolebinding.rbac.authorization.k8s.io/weave-net created
role.rbac.authorization.k8s.io/weave-net created
rolebinding.rbac.authorization.k8s.io/weave-net created
daemonset.apps/weave-net created
root@master:/home/ubuntu# kubectl get nodes -w ✓
NAME      STATUS   ROLES      AGE      VERSION
master    Ready    control-plane   4m30s   v1.27.2
worker   Ready    <none>     59s     v1.27.2
^Croot@master:/home/ubuntu#
root@master:/home/ubuntu#
```

Below the terminal, a command prompt window titled "i-071686faa1457c0ea (kub1-master)" shows the user's session information:

```
i-071686faa1457c0ea (kub1-master) ✓
PublicIPs: 13.58.119.79 PrivateIPs: 172.31.7.239
```

The system tray at the bottom of the screen includes icons for CloudShell, Feedback, Language, a search bar, and various system status indicators like battery level, signal strength, and weather (40°C Partly sunny). The date and time are also displayed as 02-06-2023 17:46.

```
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key's randomart image is:
+---[RSA 3072]---+
|oO^=+.      .+|
|.4+*o      ..|
|O.* .      . . .|
|oo + .  o o o .|
|+. . o S . + . .|
|o+     + + = . |
|.. +       *   |
|E   o      o   |
|          .     |
+---[SHA256]---+
ubuntu@ip-172-31-15-167:~/.ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-15-167:~/.ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgQC3Mflig/Yt8QXb3npH3Qh8mhetztFX/5dZyfIRCMymDan9vn+kz8AdTaV/6aHxSnPefRaTyNoVgj6IDaLM3B9SmtKizA/t6I4Cr2VRdocz7kGKfsF5ahQwBb14PVBT9Yj1rsprcgZRAqWz/yIw6Op9N/RcJfPNBbMSY4E6js/mh/cuNjh22PMnhXG9iFYPO5y32DsxMo62nCncfmHr082BsMvUD0IRbyCEKum2D5LyunCopy6JTeUjhZSGxk9p3ushEg9eDm/BREm2cl+0+PIA0xgVGBRtbDU2Lomv0EjUmHw0WZxs0DhIhImQmjz8tn5j3gV2TwJJKHOCzWz8QJs0ibQNp7KGyyYZRM8ZjSKQqWiUrIzAuUf+or54aYQQ21++D73uNiDFvAo8D5CUvOIIIn133emCHPs84Gcn/Puyw91Rjzmz7loA0aB/EZRwFw+U89bInyCygwLN2zTQpgs1AEBoQMJeDPVjjVzas+WSUF9K/ce8Ac4otQJcwCxE= ubuntu@ip-172-31-15-167 ✓
ubuntu@ip-172-31-15-167:~/.ssh$ [redacted]

i-036fd59bb24cf9947 (Terraform) ✓
PublicIPs: 3.145.34.137 PrivateIPs: 172.31.15.167
```

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41°C Mostly sunny 17:22 02-06-2023

The screenshot shows a terminal window titled "Inbox (4,239) - dyaswanthik" with several tabs open at the top, including "Instances | EC2 Manager", "EC2 Instance Connect", "EC2 Instance Connect", "Install | Terraform | HashiCo", and "AWS Home". The main area displays a terminal session for an EC2 instance. The user is in a nano editor session, specifically in the "/root/.ssh/authorized_keys" file. The content of the file is a long string of SSH public keys, starting with "ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQ...". A red checkmark is drawn over the bottom right corner of the terminal window.

```
GNU nano 4.8
authorized keys
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQ...H9C083Dz+0T4CxgsPXC8bty9viSlqP+itHaElzLlk++VgxDGmMAWgIrGYGYkjN4Kx2BgD0vXl5>
> bInyCywgLN2zTGpgs1AEBOjedDPVjjVzAas+WSUf9K/ce8Ac4otQJcwCxE= ubuntu@ip-172-31-15-167[]
```

[Wrote 2 lines]

^G Get Help ^O Write Out ^W Where Is ^Y Cut Text ^J Justify ^C Cur Pos M-U Undo ^M-A Mark Text M-] To Bracket M-Q Previous
^X Exit ^F Read File ^R Replace ^U Paste Text ^T To Spell ^I Go To Line M-B Redo M-C Copy Text M-W Where Was M-W Next

i-071686faa1457c0ea (kub1-master)

PublicIPs: 13.58.119.79 PrivateIPs: 172.31.7.239

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41°C Mostly sunny 17:22 02-06-2023

Inbox (4,239) - dyaswanthik... Instances | EC2 Manager... EC2 Instance Connect EC2 Instance Connect EC2 Instance Connect Install | Terraform | HashiCo... +

← → ⌂ ↻ us-east-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-036fd59bb24cf9947&osUser=ubuntu®ion=us-east-2&sshPort=22#/
Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...»

aWS Services Search [Alt+S]

SSH session details:

```
ssh-rsa AAAAB3NzaC1yc2EAAAQABgQC3Mflig/Yt8QXb3pH3Qh8mhetztFX/5dZyfIRCMymUan9vn+kz0AdTaV/6aHxSnPefRaTyNoVgj6IDaIM3B9SmtKizA/t6L4Cr2VRdocz7kGKfsF5ahQwBb14PVT9YjlrspcogZRAqWz/yIw6Op9N/KcJfJPNBbM5YEEjs/mh/cuNjh22ManhXG91FYP05y32dsxM062nCNcfmBr082BsmvUD0IRbyCEKum2D5LyunCopv6JTeDjhZSGxk9p3uShEq9eImJBRm2c1+0+PIAOXgVGRcbDU2lomvOEj0mHWDowWZxsDhIhImQmqj28Tn9j3gVZTwJPKHOCzWz8QJs0ibbQmP7KGYyfZRM8ZSKQqWiUrIzAuUf+or54aYQQ21++D73uNiDFVa08D5CUvOIIIn133emCHPs84Gcn/Puyw91Rjmz7loA0aB/EZRwFw+U89bInyCywgInZtGpgs1AEBOJeDPVjjvzAs+WSUf9R/ce9Ac4otQJcwCXB= ubuntu@ip-172-31-15-167  
ubuntu@ip-172-31-15-167:~/.ssh$ ssh ubuntu@172.31.7.239 ✓  
The authenticity of host '172.31.7.239 (172.31.7.239)' can't be established.  
ECDSA key fingerprint is SHA256:VSpkvffUXKN+CGdeduTKCzax2SyM+URxi76ayh7ldDI.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '172.31.7.239' (ECDSA) to the list of known hosts.  
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1036-aws x86_64)  
  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/advantage  
  
System information as of Fri Jun 2 11:53:29 UTC 2023  
  
System load: 0.0 Processes: 101  
Usage of /: 23.3% of 7.57GB Users logged in: 1  
Memory usage: 24% IPv4 address for eth0: 172.31.7.239  
Swap usage: 0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
27 updates can be applied immediately.  
18 of these updates are standard security updates.  
  
i-036fd59bb24cf9947 (Terraform) ✓  
Public IPs: 3.145.34.137 Private IPs: 172.31.15.167
```

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Type to search 41°C Mostly sunny 17:23 02-06-2023

Inbox (4,239) - dyaswanthk | Instances | EC2 Management | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | Sign in [Jenkins] | + | - | X

Not secure | 3.145.34.137:8080/login?from=%2F

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

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:

/var/lib/jenkins/secrets/initialAdminPassword ✓

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

Administrator password



Continue

The screenshot shows a Windows desktop environment. At the top, there is a taskbar with several open browser tabs. From left to right, the tabs are: 'Inbox (4,239) - dyaswanthk' (closed), 'Instances | EC2 Management' (closed), 'EC2 Instance Connect' (closed), 'EC2 Instance Connect' (closed), 'EC2 Instance Connect' (closed), 'Sign in [Jenkins]' (closed), and a new tab labeled 'us-east-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-036fd59bb24cf9947&osUser=ubuntu®ion=us-east-2&sshPort=22#/'. Below the taskbar, the system tray shows icons for battery, signal strength, and volume.

The main window is a terminal session titled 'aws Services Search [Alt+S]'. It displays the following text:

```
Memory usage: 24%           IPv4 address for eth0: 172.31.7.239
Swap usage:  0%

Expanded Security Maintenance for Applications is not enabled.

27 updates can be applied immediately.
18 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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

New release '22.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Jun  2 11:48:44 2023 from 3.16.146.3
ubuntu@ip-172-31-7-239:~$ exit
logout
Connection to 172.31.7.239 closed.
ubuntu@ip-172-31-15-167:~/.ssh$ cd
ubuntu@ip-172-31-15-167:~$ cat /var/lib/jenkins/secrets/initialAdminPassword
cat: /var/lib/jenkins/secrets/initialAdminPassword: Permission denied
ubuntu@ip-172-31-15-167:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
024760e93af24e68a91246e795c94b05 ✓
ubuntu@ip-172-31-15-167:~$ []
```

Below the terminal window, the taskbar continues with icons for CloudShell, Feedback, Language, a search bar, and various application icons like File Explorer, Mail, and Edge. On the far right of the taskbar, there is a weather widget showing '40°C Partly sunny', a date and time indicator '02-06-2023 17:49', and language settings 'ENG'.

Inbox (4,239) - dyaswanthik... | Instances | EC2 Manager... | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | Sign in [Jenkins] | Not secure | 3.145.34.137:8080/login?from=%2F

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

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:

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

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

Administrator password

..... ✓

Continue



Type to search 40°C Partly sunny 17:50 02-06-2023

The screenshot shows a Windows desktop environment. At the top, there is a taskbar with several pinned icons: Mail (Inbox 4,239), Instances | EC2 Manager, EC2 Instance Connect, EC2 Instance Connect, EC2 Instance Connect, Dashboard [Jenkins], and others like Gmail, YouTube, Maps, Sample Avro File, How to create a Da..., google cloud stor..., Read AVRO messag..., Quickstart: stream..., Handling Avro files..., python - Adding a..., and Adding timestamp... A status bar at the bottom displays the date (02-06-2023), time (17:56), weather (40°C Partly sunny), and system information (ENG).

The main window is a web browser displaying the Jenkins dashboard. The title bar says "Jenkins". The dashboard features a "Welcome to Jenkins!" message and a "Start building your software project" call-to-action. It includes sections for "Build Queue" (empty), "Build Executor Status" (2 Idle), and "Set up a distributed build" (links to Set up an agent, Configure a cloud, and Learn more about distributed builds). On the left sidebar, there are links for New Item, People, Build History, Manage Jenkins, and My Views.

The screenshot shows a Windows desktop environment with several open windows. In the top taskbar, there are tabs for 'Inbox (4,239) - dyawanthk', 'Instances | EC2 Management', 'EC2 Instance Connect', 'EC2 Instance Connect', 'Jenkins', and others. Below the taskbar, a browser window displays the AWS CloudShell interface. The terminal session shows the following commands and output:

```
export KUBECONFIG=/etc/kubernetes/admin.conf

You should now deploy a pod network to the cluster.
Run "kubectl apply -f [podnetwork].yaml" with one of the options listed at:
https://kubernetes.io/docs/concepts/cluster-administration/addons/

Then you can join any number of worker nodes by running the following on each as root:

kubeadm join 172.31.7.239:6443 --token hlkvet.libwikyv9lb5lf91 \
    --discovery-token-ca-cert-hash sha256:5acd5208986b5b76a2113045b8c90b8ecb6d84fe4b027616b91cb3ddb0a
root@master:/home/ubuntu# mkdir -p $HOME/.kube
root@master:/home/ubuntu# sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
root@master:/home/ubuntu# sudo chown $(id -u):$(id -g) $HOME/.kube/config
root@master:/home/ubuntu# kubectl apply -f https://github.com/weaveworks/weave/releases/download/v2.8.1/weave-daemonset-k8s.yaml
serviceaccount/weave-net created
clusterrole.rbac.authorization.k8s.io/weave-net created
clusterrolebinding.rbac.authorization.k8s.io/weave-net created
role.rbac.authorization.k8s.io/weave-net created
rolebinding.rbac.authorization.k8s.io/weave-net created
daemonset.apps/weave-net created
root@master:/home/ubuntu# kubectl get nodes -w
NAME      STATUS   ROLES      AGE     VERSION
master    Ready    control-plane   4m30s   v1.27.2
worker    Ready    <none>    59s     v1.27.2
^Croot@master:/home/ubuntu#
root@master:/home/ubuntu#
```

Below the terminal, the AWS CloudShell interface shows the instance ID: **i-071686faa1457c0ea (kub1-master)** with a red checkmark. It also lists PublicIPs: 13.58.119.79 and PrivateIPs: 172.31.7.239.

Not secure | 3.145.34.137:8080/manage/computer/createlnem

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

Dashboard > Manage Jenkins > Nodes >

/home/ubuntu/jenkins/

Labels ?

Usage ?
Use this node as much as possible

Launch method ?
Launch agents via SSH

Host ?
172.31.7.239

Credentials ?
ubuntu (anything)

Add ▾

Save

40°C Partly sunny 18:00
ENG 02-06-2023

The screenshot shows a web browser window with several tabs open. The active tab is 'Nodes [Jenkins]' at the URL '3.145.34.137:8080/computer/'. The browser's address bar also displays this URL. Below the tabs, the browser's toolbar includes icons for back, forward, search, and refresh. The main content area is the Jenkins 'Nodes' page, which lists two nodes: 'Built-In Node' and 'kub-master'. The 'kub-master' node has its status highlighted with a red underline. The Jenkins header includes the logo, a search bar, and user information for 'admin'.

This screenshot shows the 'Nodes' page in Jenkins. On the left, there are sections for 'Build Queue' (empty) and 'Build Executor Status' (listing 'kub-master' and 'Data obtained'). The main table lists nodes with columns for Name, Architecture, Clock Difference, Free Disk Space, Free Swap Space, Free Temp Space, and Response Time. The 'kub-master' row is highlighted with a red underline under the 'Name' column. The 'Data obtained' row is also highlighted with a red underline under the 'Name' column.

S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-In Node	Linux (amd64)	In sync	4.29 GB	! 0 B	4.29 GB	0ms
	kub-master	Linux (amd64)	In sync	3.12 GB	! 0 B	3.12 GB	481ms
	Data obtained	0.34 sec	0.34 sec	0.34 sec	0.34 sec	0.34 sec	0.34 sec



The screenshot shows a web browser window with multiple tabs open at the top. The active tab is 'System » Global credentials' with the URL 3.145.34.137:8080/manage/credentials/store/system/domain/. The browser's address bar also displays this URL. Below the tabs, there are several links: 'Open the home page', 'Sample Avro File', 'How to create a Da...', 'google cloud stor...', 'Read AVRO messag...', 'Quickstart: stream...', 'Handling Avro files...', 'python - Adding a...', and 'Adding timestamp...'. The main content area is titled 'Jenkins' and shows the 'Global credentials (unrestricted)' page. A red underline highlights the breadcrumb path 'Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted)'. Another red underline highlights the 'Add Credentials' button in the top right corner. The table below lists one credential entry:

ID	Name	Kind	Description
anything	ubuntu (anything)	SSH Username with private key	anything

Below the table, there is a 'Icon:' section with buttons for 'S', 'M', and 'L'.



The screenshot shows a browser window with multiple tabs open at the top. The active tab is 'Instances | EC2 Manager' with the URL '3.145.34.137:8080/manage/credentials/store/system/domain/_'. Below the tabs, the address bar shows 'Not secure | 3.145.34.137:8080/manage/credentials/store/system/domain/_'. The main content area is titled 'Global credentials (unrestricted)' and displays a table of credentials. The table has columns: ID, Name, Kind, and Description. There are two entries:

ID	Name	Kind	Description
anything	ubuntu (anything)	SSH Username with private key	anything
26756556-11d4-4617-874b-2e146f8f0c8a	Yaswanth21/*****	Username with password	

At the bottom left, there are icons for S, M, and L. At the top right, there is a search bar with placeholder 'Search (CTRL+K)', a user icon with '1', and a 'log out' button.



Screenshot of a Jenkins credential update interface. The URL in the browser bar is [Not secure | 3.145.34.137:8080/manage/credentials/store/system/domain/_/credential/26756556-11d4-4617-874b-2e146f8f0c8a/update](http://3.145.34.137:8080/manage/credentials/store/system/domain/_/credential/26756556-11d4-4617-874b-2e146f8f0c8a/update).

The Jenkins UI shows the "Update credentials" page for a credential named "Yaswanth21". The credential details are as follows:

- Scope:** Global (Jenkins, nodes, items, all child items, etc)
- Username:** Yaswanth21
- Password:** Concealed
- ID:** 26756556-11d4-4617-874b-2e146f8f0c8a

Red checkmarks are present above the "Yaswanth21" input field and to the right of the "26756556-11d4-4617-874b-2e146f8f0c8a" input field.

The Windows taskbar at the bottom includes icons for File Explorer, Task View, Mail, Edge, and others. The system tray shows the date (02-06-2023), time (18:39), and weather (40°C Partly sunny).

Not secure | 3.145.34.137:8080/view/all/newJob

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

Jenkins

Search (CTRL+K) ? 1 admin log out

Dashboard > All >

Enter an item name

project-pipeline ✓

» Required field

Freestyle project
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Multi-configuration project
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

OK Multibranch Pipeline

Type to search 40°C Partly sunny 1844 02-06-2023

Screenshot of a web browser showing the configuration page for a project-pipeline. The URL is 3.145.34.137:8080/job/project-pipeline/configure.

The page title is "Configuration".

Left sidebar navigation:

- General
- Advanced Project Options** (selected)
- Pipeline

Section: Pipeline

Sub-section: Definition

Script area:

```
1 * pipeline{  
2     agent none  
3     stages{  
4         stage('Hello'){  
5             agent{  
6                 label 'Kub-master'  
7             }  
8             steps{  
9                 echo 'Hello World'  
10            }  
11        }  
12    }  
13}  
14 }
```

A red arrow points to the line "label 'Kub-master'" in the script.

Checkboxes:

- try sample Pipeline... (unchecked)
- Use Groovy Sandbox (checked)

Buttons:

- Save (blue button)
- Apply

System tray icons and status:

- Type to search
- Windows Start button
- Icons for File Explorer, Edge, Mail, etc.
- 40°C Partly sunny
- 18:47 02-06-2023

Not secure | 3.145.34.137:8080/job/project-pipeline/

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

Jenkins

Dashboard > project-pipeline >

Status Changes Build Now Configure Delete Pipeline Add description Disable Project

Pipeline project-pipeline

Stage View

Average stage times:
(Average full run time: ~3min 25s)

Hello
3min 21s

#1 Jun 02 18:48 No Changes 3min 21s ✓

Full Stage View Rename Pipeline Syntax

Build History trend Filter builds... Jun 2, 2023, 1:18 PM Atom feed for all Atom feed for failures

Permalinks

- Last build (#1), 3 min 46 sec ago
- Last stable build (#1), 3 min 46 sec ago
- Last successful build (#1), 3 min 46 sec ago
- Last completed build (#1), 3 min 46 sec ago

Type to search

40°C Partly sunny 18:51 ENG 02-06-2023

```
*project2.docx new _1 - Notepad
File Edit Format View Help
pipeline{
    agent none
    environment {
        DOCKERHUB_CREDENTIALS=credentials('26756556-11d4-4617-874b-2e146f8f0c8a')
    }
    stages{
        stage('Hello'){
            agent{
                label 'Kub-master'
            }
            steps{
                echo 'Hello World'
            }
        }
        stage('git'){
            agent{
                label 'Kub-master'
            }
            steps{
                git'https://github.com/intellipaat2/website.git'
            }
        }
        stage('docker') {
            agent {
                label 'Kub-master'
            }
            steps {
                sh 'sudo docker build /home/ubuntu/jenkins/workspace/project-pipeline -t Yaswanth21/project2'
                sh 'sudo echo $DOCKERHUB_CREDENTIALS_PSW | sudo docker login -u $DOCKERHUB_CREDENTIALS_USR --password-stdin'
                sh 'sudo docker push Yaswanth21/project2'
            }
        }
        stage('Kube meets') {
            agent {
                label 'Kub-master'
            }
            steps {
                sh 'sudo kubectl create -f deploy.yml'
                sh 'sudo kubectl create -f svc.yml'
            }
        }
    }
}
-----
```

✓

Type to search   Ln 119, Col 57 80% Windows (CRLF) UTF-8
37°C Mostly clear ENG 02-06-2023

Screenshot of a web browser showing the "Advanced Project Options" configuration page for a project-pipeline. The pipeline script is displayed in a code editor, and a red checkmark is placed over the "label 'Kub-master'" line.

The pipeline script content is:

```
1 * pipeline{
2     agent none
3     environment {
4         DOCKERHUB_CREDENTIALS=credentials('26756556-11d4-4617-874b-2e146f8f0c8a')
5     }
6
7     stages{
8         stage('Hello'){
9             agent{
10                 label 'Kub-master'
11             }
12             steps{
13                 echo 'Hello World'
14             }
15         }
16         stage('git'){
17             agent{
```

Connect to instance | EC2 | EC2 Instance Connect | EC2 Instance Connect | project-pipeline [Jenkins] | Docker Hub

Not secure | 3.145.93.205:8080/job/project-pipeline/

Gmail YouTube Maps Sample Avro File How to create a Da... google cloud stor... Read AVRO messag... Quickstart: stream... Handling Avro files... python - Adding a... Adding timestamp...

Jenkins

Dashboard > project-pipeline >

Status Changes Build Now Configure Delete Pipeline Add description Disable Project

Pipeline project-pipeline

Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

Build History trend Filter builds... #2 Jun 4, 2023, 4:45 AM #1 Jun 4, 2023, 4:44 AM Atom feed for all Atom feed for failures

Average stage times: (Average full run time: ~23s)

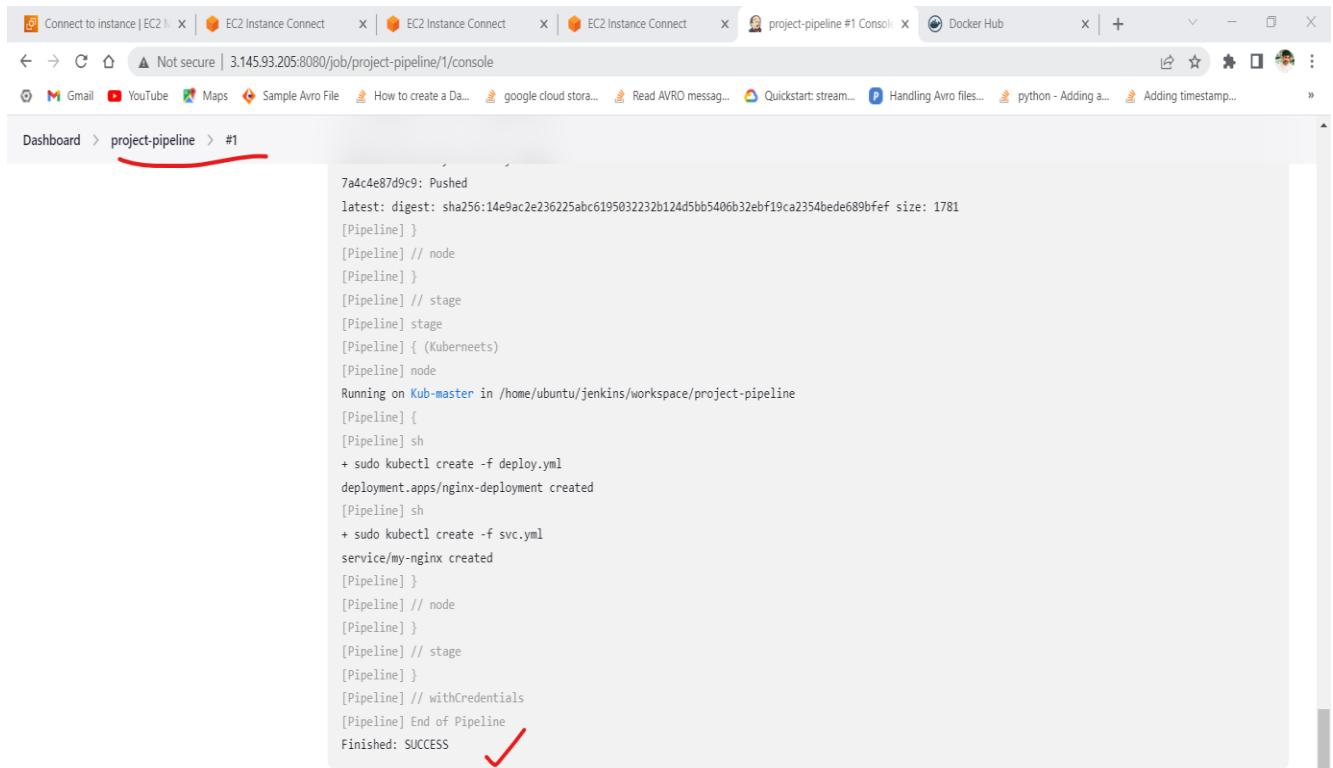
	Hello	git	docker	Kubernetes
#2	352ms	3s	7s	1s
#1	221ms	512ms	4s	890ms failed

Stage View

Permalinks Last build (#2) 17 sec ago

Type here to search Air: Moderate 10:17 04-06-2023

The screenshot shows the Jenkins pipeline interface for a project named 'project-pipeline'. On the left, there's a sidebar with various Jenkins management links like 'Status', 'Changes', 'Build Now', 'Configure', 'Delete Pipeline', etc. Below that is a 'Build History' section showing two builds: #2 (Jun 4, 2023, 4:45 AM) and #1 (Jun 4, 2023, 4:44 AM). The main area is titled 'Pipeline project-pipeline' and displays a 'Stage View' grid. The grid has four columns: 'Hello', 'git', 'docker', and 'Kubernetes'. Each column shows average stage times: Hello (352ms), git (3s), docker (7s), and Kubernetes (1s). The 'Kubernetes' row for build #2 is highlighted in red and labeled 'failed' with a red 'X' icon. A red arrow points to this failed stage. The Jenkins logo is at the top right.



Not secure | 3.145.93.205:8080/job/project-pipeline/1/console

Dashboard > project-pipeline > #1

```
7a4c4e87d9c9: Pushed
latest: digest: sha256:14e9ac2e236225abc6195032232b124d5bb5406b32ebf19ca2354bede689bfef size: 1781
[Pipeline] }
[Pipeline] // node
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Kubernetes)
[Pipeline] node
Running on Kub-master in /home/ubuntu/jenkins/workspace/project-pipeline
[Pipeline] {
[Pipeline] sh
+ sudo kubectl create -f deploy.yml
deployment.apps/nginx-deployment created
[Pipeline] sh
+ sudo kubectl create -f svc.yml
service/my-nginx created
[Pipeline] }
[Pipeline] // node
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] End of Pipeline
Finished: SUCCESS
```



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Docker Hub

Search Docker Hub

Explore Repositories Organizations Help

Upgrade  yaswanth21

yaswanth21 Search by repository name All Content Create repository

yaswanth21 / project2 ✓
Contains: Image | Last pushed: 3 minutes ago

Inactive 0 12 Public

yaswanth21 / apache2
Contains: Image | Last pushed: a month ago

Inactive 0 21 Public

yaswanth21 / apache
Contains: Image | Last pushed: a month ago

Inactive 0 3 Public

Create an Organization
Manage Docker Hub repositories with your team

community ALL-HANDS

Type here to search

Windows Start button

34°C Smoke ENG 10:18 04-06-2023