



Academic Year: 2025-26
Semester: V
Class / Branch/ Div: TEIT C
Subject: ADL Lab

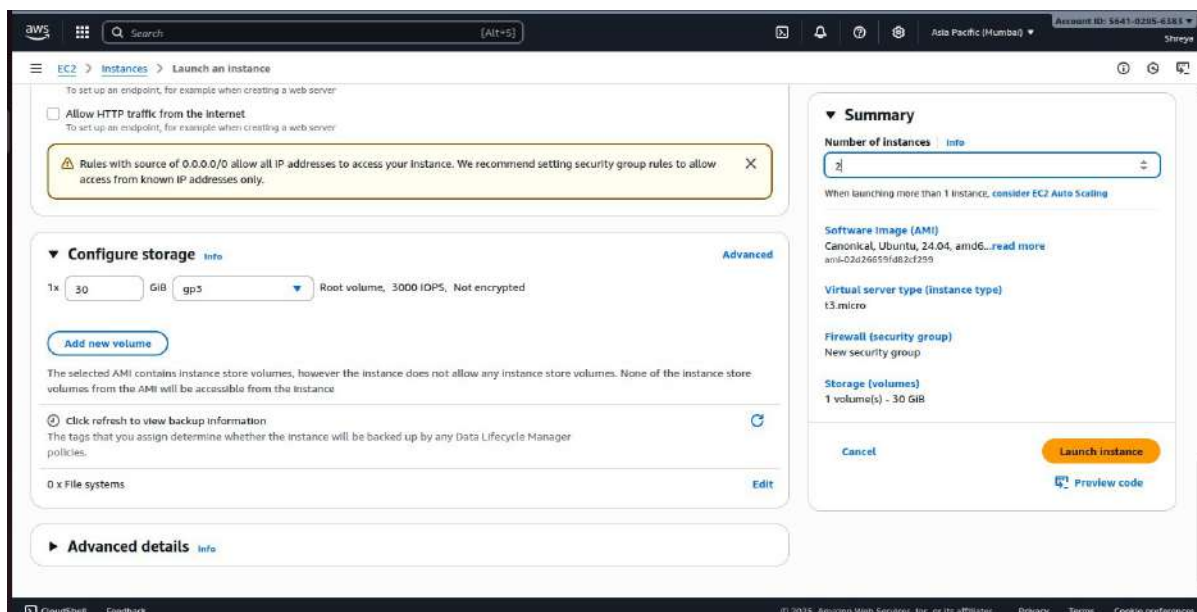
Name of Student: Shreya Sonawale
Student ID: 23104134
Roll No. 43
Date of Submission: 03/10/25

Experiment No: 4

Aim: To understand the Kubernetes Cluster Architecture, install and Spin Up a Kubernetes Cluster on Linux Machines/Cloud Platforms.

Software Used: AWS

Code & Output:





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The screenshot shows the AWS Management Console for the 'Instances' page. The 'master' instance is selected, and the 'Actions' menu is open, showing options like 'Attach to Auto Scaling Group', 'Change termination protection', 'Change stop protection', 'Change shutdown behavior', 'Change instance migration on reboot', 'Change auto-recovery behavior', 'Change instance type', 'Change CPU options', 'Change Nitro Enclaves', 'Change credit specification', 'Change resource based naming options', 'Modify instance placement', 'Modify Capacity Reservation settings', 'Edit user data', 'Allow tags in instance metadata', 'Manage tags', and 'Modify instance metadata options'.

The screenshot shows the AWS Management Console for the 'Instances' page. The 'slave' instance is selected, and the 'Status check' shows 'Initializing'. A notification banner at the top indicates 'Successfully enabled termination protection for Instance i-018559a8ecd15a454. The Instance can't be deleted.'



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Failed to terminate (delete) an instance. The instance 'i-018559a8ecd15a454' may not be terminated. Modify its 'DisableApiTermination' instance attribute and try again.

Instances (1/2)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
master	i-0688185aef63c4371	Running	t3.micro	Initializing	View alarms +	ap-south-1b	ec2-13-203-
slave	i-018559a8ecd15a454	Running	t3.micro	Initializing	View alarms +	ap-south-1b	ec2-13-203-

i-018559a8ecd15a454 (slave)

Instance summary

Instance ID: i-018559a8ecd15a454

Public IPv4 address: 13.203.203.176 | open address

Private IPv4 addresses: 172.31.14.122

Instance state: Running

Public DNS: ec2-13-203-203-176.ap-south-1.compute.amazonaws.com | open address

```
bridge-utils containedrns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown auto-tools cgroups-mount | cgroup-lite debootstrap docker-buildx docker-compose-v2 docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
  bridge-utils containedrns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
0 upgraded, 8 newly installed, 0 to remove and 41 not upgraded.
Need to get 79.2 MB of archives.
After this operation, 386 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 noble/universe amd64 pigz amd64 2.8-1 [65.0 kB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 bridge-utils amd64 1.7.1-1ubuntu2 [33.9 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 runc amd64 1.2.5-0ubuntu1-24.04.1 [8843 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 containedrns-root-data amd64 1.7.27-0ubuntu1-24.04.1 [37.7 MB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dnsmasq-base amd64 2.80-2ubuntu0.1 [5928 B]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dnsmasq-base amd64 2.80-2ubuntu0.1 [376 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 docker.io amd64 27.5.1-0ubuntu3-24.04.2 [33.0 MB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 ubuntu-fan all 0.12.16-24.04.1 [34.2 kB]
Fetched 79.2 MB in 1s (88.7 MB/s)
Preconfiguring packages ...
Selecting previously unselected package pigz.
(Reading database ... 71710 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.8-1_amd64.deb ...
Unpacking pigz (2.8-1) ...
Selecting previously unselected package bridge-utils.
Preparing to unpack .../1-bridge-utils_1.7.1-1ubuntu2_amd64.deb ...
Unpacking bridge-utils (1.7.1-1ubuntu2) ...
Selecting previously unselected package runc.
Preparing to unpack .../2-runc_1.2.5-0ubuntu1-24.04.1_amd64.deb ...
Unpacking runc (1.2.5-0ubuntu1-24.04.1) ...
Selecting previously unselected package containedrns-root-data.
Preparing to unpack .../3-containedrns-root-data_1.7.27-0ubuntu1-24.04.1_amd64.deb ...
Unpacking containedrns-root-data (1.7.27-0ubuntu1-24.04.1) ...
Unpacking containedrns-root-data (1.7.27-0ubuntu1-24.04.1) ...
```

i-018559a8ecd15a454 (slave)

PublicIPs: 13.203.203.176 PrivateIPs: 172.31.14.122



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```
aws
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Shreye

bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-buildx docker-compose-v2 docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
0 upgraded, 8 newly installed, 0 to remove and 41 not upgraded.
Need to get 79.2 MB of archives.
After this operation, 300 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 noble/universe amd64 pigz amd64 2.8-1 [65.0 kB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 bridge-utils amd64 1.7.1-1ubuntu2 [39.9 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 runc amd64 1.2.5-0ubuntu1-24.04.1 [8843 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 containerd amd64 1.7.27-0ubuntu1-24.04.1 [37.7 MB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dns-root-data all 2024071801-ubuntu0.24.04.1 [5918 B]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dnsmasq-base amd64 2.90-2ubuntu0.1 [376 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 docker.io amd64 27.5.1-0ubuntu3-24.04.2 [39.0 MB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 ubuntu-fan all 0.12.16+24.04.1 [34.2 kB]
Fetched 79.2 MB in 1s (84.6 MB/s)
Preconfiguring packages ...
Selecting previously unselected package pigz.
(Reading database ... 71710 files and directories currently installed.)
Preparing to unpack .../6-pigz_2.8-1_amd64.deb ...
Unpacking pigz (2.8-1) ...
Selecting previously unselected package bridge-utils.
Preparing to unpack .../1-bridge-utils_1.7.1-1ubuntu2_amd64.deb ...
Unpacking bridge-utils (1.7.1-1ubuntu2) ...
Selecting previously unselected package runc.
Preparing to unpack .../2-runc_1.2.5-0ubuntu1-24.04.1_amd64.deb ...
Unpacking runc (1.2.5-0ubuntu1-24.04.1) ...
Selecting previously unselected package containerd.
Preparing to unpack .../3-containerd_1.7.27-0ubuntu1-24.04.1_amd64.deb ...
Unpacking containerd (1.7.27-0ubuntu1-24.04.1) ...

i-0688185aef63c4371 (master)
PublicIPs: 13.233.139.93 PrivateIPs: 172.31.5.202

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```

```
aws
Search
[Alt+S]
Account ID: 5441-0285-6381
Shreye

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@slave-node:~$ sudo systemctl enable docker
ubuntu@slave-node:~$ sudo systemctl status docker
* docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-10-03 08:06:39 UTC; 1min 8s ago
   TriggeredBy: • docker.socket
   Main PID: 2861 (dockerd)
   Tasks: 9
   Memory: 22.5M (peak: 22.7M)
   CPU: 328ms
   CGroup: /system.slice/docker.service
           └─2861 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Oct 03 08:06:38 slave-node systemd[1]: Starting docker.service - Docker Application Container Engine...
Oct 03 08:06:38 slave-node dockerd[2861]: time="2025-10-03T08:06:38.365706084Z" level=info msg="Starting up"
Oct 03 08:06:38 slave-node dockerd[2861]: time="2025-10-03T08:06:38.368185990Z" level=info msg="OTEL tracing is not configured, using no-op tracer provider"
Oct 03 08:06:38 slave-node dockerd[2861]: time="2025-10-03T08:06:38.388372866Z" level=info msg="Detected 127.0.0.53 nameserver, assuming system-resolved, so using res"
Oct 03 08:06:38 slave-node dockerd[2861]: time="2025-10-03T08:06:38.409954326Z" level=info msg="Loading containers: start."
Oct 03 08:06:39 slave-node dockerd[2861]: time="2025-10-03T08:06:39.161743888Z" level=info msg="Loading containers: done."
Oct 03 08:06:39 slave-node dockerd[2861]: time="2025-10-03T08:06:39.182524259Z" level=info msg="Docker daemon" commit="27.5.1-0ubuntu3-24.04.2" containerd-snapshotter="s"
Oct 03 08:06:39 slave-node dockerd[2861]: time="2025-10-03T08:06:39.18263276Z" level=info msg="Daemon has completed initialization"
Oct 03 08:06:39 slave-node dockerd[2861]: time="2025-10-03T08:06:39.204945118Z" level=info msg="API listen on /run/docker.sock"
Oct 03 08:06:39 slave-node systemd[1]: Started docker.service - Docker Application Container Engine.

lines 1-22/22 (END)

i-018559a8ecd15a454 (slave)
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```
aws
[Alt+S]
Account ID: 5441-0285-6381
Shreye

No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@master-node:~$ sudo systemctl enable docker
ubuntu@master-node:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-10-03 08:06:47 UTC; 58s ago
   TriggeredBy: ● docker.socket
   Docs: https://docs.docker.com
   Main PID: 2858 (dockerd)
   Tasks: 9
   Memory: 22.0M (peak: 22.1M)
   CPU: 329ms
   CGroup: /system.slice/docker.service
           └─2858 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Oct 03 08:06:46 master-node systemd[1]: Starting docker.service - Docker Application Container Engine...
Oct 03 08:06:46 master-node dockerd[2858]: time="2025-10-03T08:06:46.839708202Z" level=info msg="Starting up"
Oct 03 08:06:46 master-node dockerd[2858]: time="2025-10-03T08:06:46.840567255Z" level=info msg="OTEL tracing is not configured, using no-op tracer provider"
Oct 03 08:06:46 master-node dockerd[2858]: time="2025-10-03T08:06:46.840729207Z" level=info msg="detected 127.0.0.53 nameserver, assuming systemd-resolved, so using re
Oct 03 08:06:46 master-node dockerd[2858]: time="2025-10-03T08:06:46.944884224Z" level=info msg="Loading containers: start."
Oct 03 08:06:47 master-node dockerd[2858]: time="2025-10-03T08:06:47.243699830Z" level=info msg="Loading containers: done."
Oct 03 08:06:47 master-node dockerd[2858]: time="2025-10-03T08:06:47.259418447Z" level=info msg="Docker daemon" commit="27.5.1-0ubuntu3-24.04.2" containerd-snapshotter
Oct 03 08:06:47 master-node dockerd[2858]: time="2025-10-03T08:06:47.259527607Z" level=info msg="Daemon has completed initialization"
Oct 03 08:06:47 master-node dockerd[2858]: time="2025-10-03T08:06:47.280877929Z" level=info msg="API listen on /run/docker.sock"
Oct 03 08:06:47 master-node systemd[1]: Started docker.service - Docker Application Container Engine.
lines 1-22/22 (END)

i-0688185aef63c4371 (master)
PublicIP: 13.233.139.93 PrivateIP: 172.31.5.202

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```
ubuntu@slave-node:~$ sudo systemctl start docker
ubuntu@slave-node:~$

i-018559a8ecd15a454 (slave)
PublicIP: 13.203.203.176 PrivateIP: 172.31.14.122

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```

```
ubuntu@master-node:~$ sudo systemctl start docker
ubuntu@master-node:~$

i-0688185aef63c4371 (master)
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```
ap-south-1.console.aws.amazon.com/ec2-instance-connect/sh/home?region=ap-south-1&connType=standard&instanceId=i-0688185aef63c4371&osUser=ubuntu&ssh... Verify that it's you
aws Search [Alt+S] Asia Pacific (Mumbai) Account ID: 5641-0295-6283 Shroya

Reading state information... Done
ca-certificates is already the newest version (20240203).
ca-certificates set to manually installed.
curl is already the newest version (8.5.0-2ubuntu10.6).
curl set to manually installed.
gpg is already the newest version (2.4.4-2ubuntu17.3).
gpg set to manually installed.
The following NEW packages will be installed:
  apt-transport-https
0 upgraded, 1 newly installed, 0 to remove and 41 not upgraded.
Need to get 3970 B of archives.
After this operation, 36.9 kB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 apt-transport-https all 2.8.3 [3970 B]
Fetched 3970 B in 0s (384 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 72084 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.8.3_all.deb ...
Unpacking apt-transport-https (2.8.3) ...
Setting up apt-transport-https (2.8.3) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@master-node:~$ curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.34/deb/Release.key | sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
ubuntu@master-node:~$ sudo apt-get install -y kubelet kubeadm kubectl

i-0688185aef63c4371 (master)
PublicIPs: 13.233.159.93 PrivateIPs: 172.31.5.202

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```
ap-south-1.console.aws.amazon.com/ec2-instance-connect/sh/home?region=ap-south-1&connType=standard&instanceId=i-018559a8ecd15a454&osUser=ubuntu&ssh... Verify that it's you
aws Search [Alt+S] Asia Pacific (Mumbai) Account ID: 5641-0295-6283 Shroya

Reading state information... Done
ca-certificates is already the newest version (20240203).
ca-certificates set to manually installed.
curl is already the newest version (8.5.0-2ubuntu10.6).
curl set to manually installed.
gpg is already the newest version (2.4.4-2ubuntu17.3).
gpg set to manually installed.
The following NEW packages will be installed:
  apt-transport-https
0 upgraded, 1 newly installed, 0 to remove and 41 not upgraded.
Need to get 3970 B of archives.
After this operation, 36.9 kB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 apt-transport-https all 2.8.3 [3970 B]
Fetched 3970 B in 0s (384 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 72084 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.8.3_all.deb ...
Unpacking apt-transport-https (2.8.3) ...
Setting up apt-transport-https (2.8.3) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@slave-node:~$ curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.34/deb/Release.key | sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
ubuntu@slave-node:~$ sudo apt-get install -y kubelet kubeadm kubectl

i-018559a8ecd15a454 (slave)
PublicIPs: 13.203.203.176 PrivateIPs: 172.31.14.122

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```
ap-south-1.console.aws.amazon.com/ec2-instance-connect/s3/home?region=ap-south-1&connType=standard&instanceId=i-018559a8ecd15a454&osUser=ubuntu&ssh... Verify that it's you
aws Search [Alt+S] Asia Pacific (Mumbai) Account ID: 5641-6295-6283 Shruya

Selecting previously unselected package kubectll.
Preparing to unpack .../3-kubectll_1.34.1-1.1_amd64.deb ...
Unpacking kubectll (1.34.1-1.1) ...
Selecting previously unselected package kubernetes-cni.
Preparing to unpack .../4-kubernetes-cni_1.7.1-1.1_amd64.deb ...
Unpacking kubernetes-cni (1.7.1-1.1) ...
Selecting previously unselected package kubelet.
Preparing to unpack .../5-kubelet_1.34.1-1.1_amd64.deb ...
Unpacking kubelet (1.34.1-1.1) ...
Setting up conntrack (1:1.4.8-1ubuntu1) ...
Setting up kubectll (1.34.1-1.1) ...
Setting up cri-tools (1.34.0-1.1) ...
Setting up kubernetes-cni (1.7.1-1.1) ...
Setting up kubeadm (1.34.1-1.1) ...
Setting up kubelet (1.34.1-1.1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@slave-node:~$ sudo apt-mark hold kubelet kubeadm kubectll
kubelet set on hold.
kubeadm set on hold.
kubectll set on hold.
ubuntu@slave-node:~$
```

i-018559a8ecd15a454 (slave)
PublicIPs: 13.203.203.176 PrivateIPs: 172.31.14.122

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```
ap-south-1.console.aws.amazon.com/ec2-instance-connect/s3/home?region=ap-south-1&connType=standard&instanceId=i-0688185aef63c4371&osUser=ubuntu&ssh... Verify that it's you
aws Search [Alt+S] Asia Pacific (Mumbai) Account ID: 5641-6295-6283 Shruya

Selecting previously unselected package kubectll.
Preparing to unpack .../3-kubectll_1.34.1-1.1_amd64.deb ...
Unpacking kubectll (1.34.1-1.1) ...
Selecting previously unselected package kubernetes-cni.
Preparing to unpack .../4-kubernetes-cni_1.7.1-1.1_amd64.deb ...
Unpacking kubernetes-cni (1.7.1-1.1) ...
Selecting previously unselected package kubelet.
Preparing to unpack .../5-kubelet_1.34.1-1.1_amd64.deb ...
Unpacking kubelet (1.34.1-1.1) ...
Setting up conntrack (1:1.4.8-1ubuntu1) ...
Setting up kubectll (1.34.1-1.1) ...
Setting up cri-tools (1.34.0-1.1) ...
Setting up kubernetes-cni (1.7.1-1.1) ...
Setting up kubeadm (1.34.1-1.1) ...
Setting up kubelet (1.34.1-1.1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@master-node:~$ sudo apt-mark hold kubelet kubeadm kubectll
kubelet set on hold.
kubeadm set on hold.
kubectll set on hold.
ubuntu@master-node:~$
```

i-0688185aef63c4371 (master)
PublicIPs: 13.233.139.93 PrivateIPs: 172.31.5.202

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```
kubeadm set on hold.  
kubeadm set on hold.  
kubectl set on hold.  
ubuntu@master-node:~$ sudo kubeadm init --pod-network-cidr=10.244.0.0/10 --ignore-preflighterrors=all  
error: unknown flag: --ignore-preflighterrors  
To see the stack trace of this error execute with --v=5 or higher  
ubuntu@master-node:~$
```

i-0688185aef63c4371 (master)
PublicIPs: 13.233.139.93 PrivateIPs: 172.31.5.202

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```
https://kubernetes.io/docs/concepts/cluster-administration/worker-nodes/  
Then you can join any number of worker nodes by running the following on each as root:  
kubeadm join 172.31.5.202:6443 --token ac7tk4.96bp3rf7uxuvf312 \\\n--discovery-token-ca-cert-hash sha256:bcded36483e402dcb07f85d73774a2d41478e7704a097f72c8876bb9005d4fd  
ubuntu@master-node:~$
```

i-0688185aef63c4371 (master)
PublicIPs: 13.233.139.93 PrivateIPs: 172.31.5.202

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```
kubeadm join 172.31.5.202:6443 --token ac7tk4.96bp3rf7uxuvf312 \\\n--discovery-token-ca-cert-hash sha256:bcded36483e402dcb07f85d73774a2d41478e7704a097f72c8876bb9005d4fd  
ubuntu@master-node:~$ mkdir -p $HOME/.kube  
ubuntu@master-node:~$ sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config  
ubuntu@master-node:~$ sudo chown $(id -u):$(id -g) $HOME/.kube/config  
ubuntu@master-node:~$
```

i-0688185aef63c4371 (master)
PublicIPs: 13.233.139.93 PrivateIPs: 172.31.5.202

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```
Last login: Mon Jul 22 08:44:23 2024 from 18.206.107.29  
ubuntu@master:~$ kubectl get pods --all-namespaces  
NAMESPACE NAME READY STATUS RESTARTS AGE  
kube-flannel kube-flannel-ds-qtfbw 1/1 Running 2 (66s ago) 16m  
kube-flannel kube-flannel-ds-t9v2g 1/1 Running 2 (65s ago) 6m29s  
kube-system coredns-7db6d8ff4d-2h5b4 1/1 Running 1 (119s ago) 30m  
kube-system coredns-7db6d8ff4d-sfzs8 1/1 Running 1 (119s ago) 30m  
kube-system etcd-master 1/1 Running 1 (119s ago) 31m  
kube-system kube-apiserver-master 1/1 Running 1 (119s ago) 31m  
kube-system kube-controller-manager-master 1/1 Running 1 (119s ago) 31m  
kube-system kube-proxy-8kd97 0/1 CrashLoopBackOff 5 (3s ago) 6m29s  
kube-system kube-proxy-9x78m 0/1 CrashLoopBackOff 10 (21s ago) 30m  
kube-system kube-scheduler-master 1/1 Running 1 (119s ago) 31m  
ubuntu@master:~$ kubectl get pods --all-namespaces  
NAMESPACE NAME READY STATUS RESTARTS AGE  
kube-flannel kube-flannel-ds-qtfbw 1/1 Running 2 (118s ago) 17m  
kube-flannel kube-flannel-ds-t9v2g 1/1 Running 2 (117s ago) 7m21s  
kube-system coredns-7db6d8ff4d-2h5b4 1/1 Running 1 (2m51s ago) 31m  
kube-system coredns-7db6d8ff4d-sfzs8 1/1 Running 1 (2m51s ago) 31m  
kube-system etcd-master 1/1 Running 1 (2m51s ago) 31m  
kube-system kube-apiserver-master 1/1 Running 1 (2m51s ago) 31m  
kube-system kube-controller-manager-master 1/1 Running 1 (2m51s ago) 31m  
kube-system kube-proxy-8kd97 1/1 Running 6 (55s ago) 7m21s  
kube-system kube-proxy-9x78m 1/1 Running 11 (73s ago) 31m  
kube-system kube-scheduler-master 1/1 Running 1 (2m51s ago) 31m  
ubuntu@master:~$
```




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Conclusion: In this experiment, we have learned how to use the Google App Engine Launcher to deploy a web application. This practical provides a foundation for deploying more complex applications on the Google App Engine platform.