



Semester: V
Academic Year: 2023-24
Student ID: 21104010
Class / Branch: TE IT
Subject: Advanced Devops Lab (ADL)
Name of Instructor: Prof. Manjusha K.

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EXPERIMENT NO. 03

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

Outputs:-

Instances (4) <small>Info</small>								
<input type="text" value="Find Instance by attribute or tag (case-sensitive)"/>								
<input type="checkbox"/>	Name ▾	Instance ID	Instance state ▾	Instance type ▾	Status check	Alarm status	Availability Zone ▾	Public IPv4 DNS ▾
<input type="checkbox"/>	Master	i-0fb83e21133317a34	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1a	ec2-18-213-2-203.com...
<input type="checkbox"/>	Slave	i-09fd590764eaa9386	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1a	ec2-3-91-44-185.comp...

```
Usage of /: 20.6% of 7.57GB   Users logged in: 0
Memory usage: 25%           IPv4 address for eth0: 172.31.18.96
Swap usage: 0%
```

```
Expanded Security Maintenance for Applications is not enabled.
```

```
0 updates can be applied immediately.
```

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

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

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

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

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

```
ubuntu@ip-172-31-18-96:~$
```

```
i-0fb83e21133317a34 (Master)
```

```
PublicIPs: 18.213.2.203 PrivateIPs: 172.31.18.96
```



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```
Usage of /: 20.6% of 7.57GB  Users logged in: 0
Memory usage: 23%          IPv4 address for eth0: 172.31.30.63
Swap usage: 0%
```

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

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

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

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

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

ubuntu@ip-172-31-30-63:~\$

i-09fd590764eaa9386 (Slave)

PublicIPs: 3.91.44.185 PrivateIPs: 172.31.30.63

```
ubuntu@ip-172-31-30-63:~$ sudo su
root@ip-172-31-30-63:/home/ubuntu# apt-get update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
```

```
root@ip-172-31-30-63:/home/ubuntu# apt-get install -y docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-doc ri
The following NEW packages will be installed:
```




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```
root@ip-172-31-18-96:/home/ubuntu# docker --version
Docker version 24.0.5, build 24.0.5-0ubuntu1-22.04.1
```

```
root@ip-172-31-18-96:/home/ubuntu# sudo systemctl enable docker
root@ip-172-31-18-96:/home/ubuntu# sudo systemctl start docker
root@ip-172-31-18-96:/home/ubuntu# sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-10-13 09:03:18 UTC; 6min ago
 TriggeredBy: ● docker.socket
    Docs: https://docs.docker.com
   Main PID: 2633 (dockerd)
     Tasks: 8
    Memory: 33.4M
       CPU: 305ms
    CGroup: /system.slice/docker.service
            └─2633 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Oct 13 09:03:18 ip-172-31-18-96 systemd[1]: Starting Docker Application Container Engine..
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.385031586Z" level=
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.386764695Z" level=
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.522620237Z" level=
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.831382238Z" level=
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.896882602Z" level=
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.897338266Z" level=
Oct 13 09:03:18 ip-172-31-18-96 dockerd[2633]: time="2023-10-13T09:03:18.953706830Z" level=
Oct 13 09:03:18 ip-172-31-18-96 systemd[1]: Started Docker Application Container Engine.
lines 1-21/21 (END)
```

```
root@ip-172-31-18-96:/home/ubuntu# apt-get update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
root@ip-172-31-18-96:/home/ubuntu# sudo apt-get install -y apt-transport-https ca-certificates curl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
```

```
root@ip-172-31-18-96:/home/ubuntu# apt-mark hold kubelet kubeadm kubectl
kubelet set on hold.
kubeadm set on hold.
kubectl set on hold.
root@ip-172-31-18-96:/home/ubuntu# kubeadm version
kubeadm version: &version.Info{Major:"1", Minor:"28", GitVersion:"v1.28.2",
:34:32Z", GoVersion:"go1.20.8", Compiler:"gc", Platform:"linux/amd64"}
root@ip-172-31-18-96:/home/ubuntu#
```



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Conclusion: Thus, we have successfully understood the Kubernetes Cluster Architecture, install and Spin Up a Kubernetes Cluster on Linux Machines/Cloud Platforms.