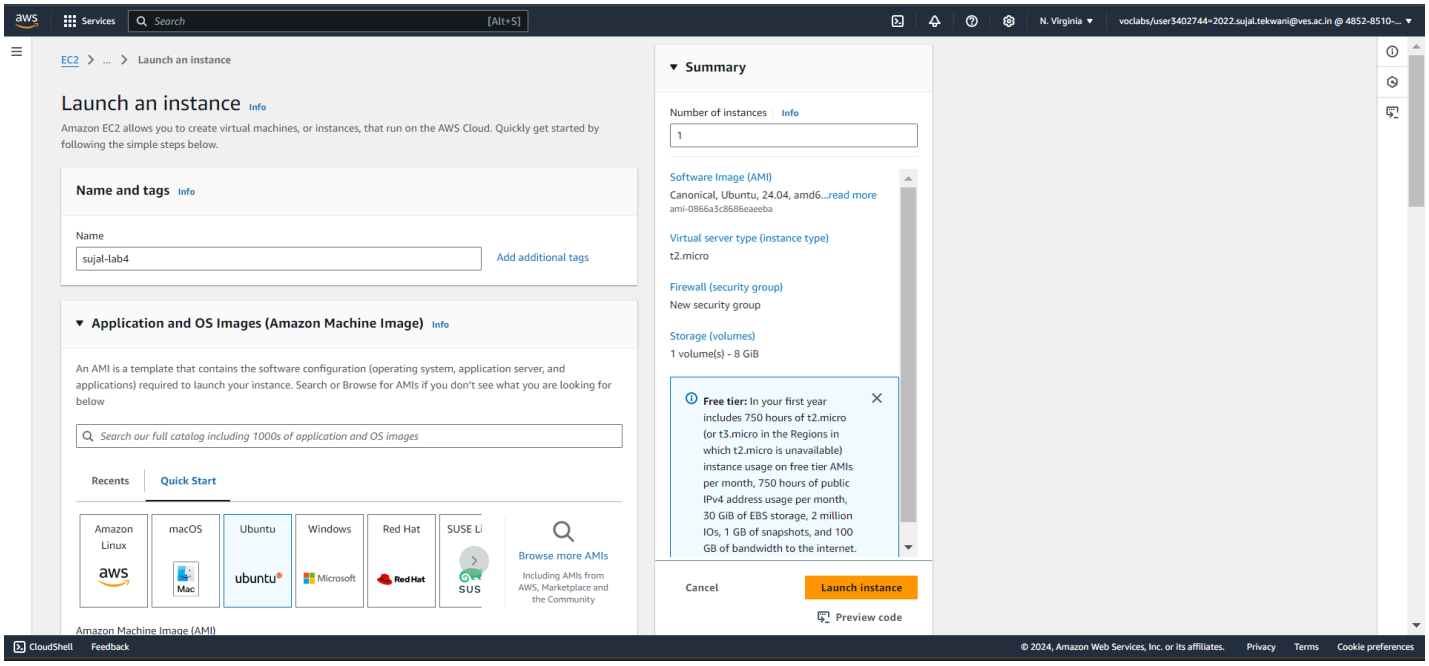
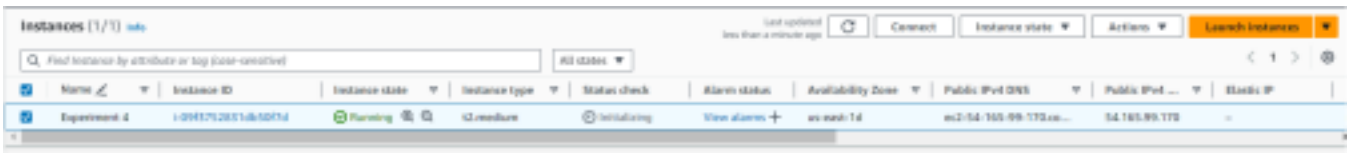
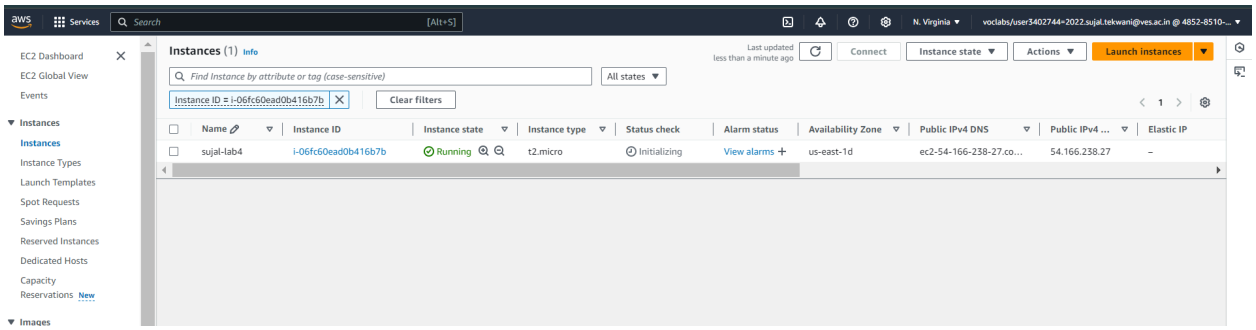
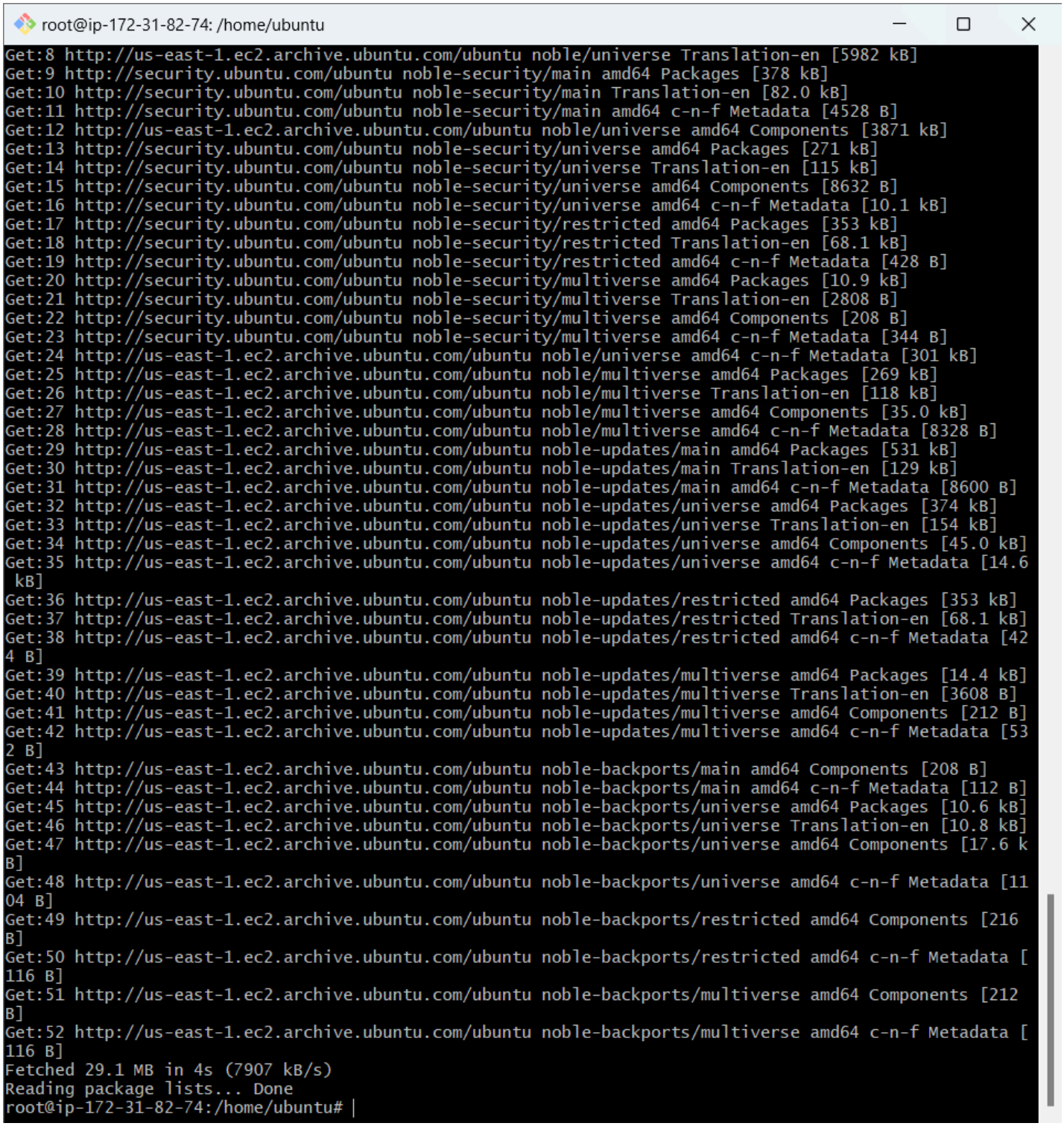
Name:Sujal.S.Tekwani
Class:D15B
Roll No:63

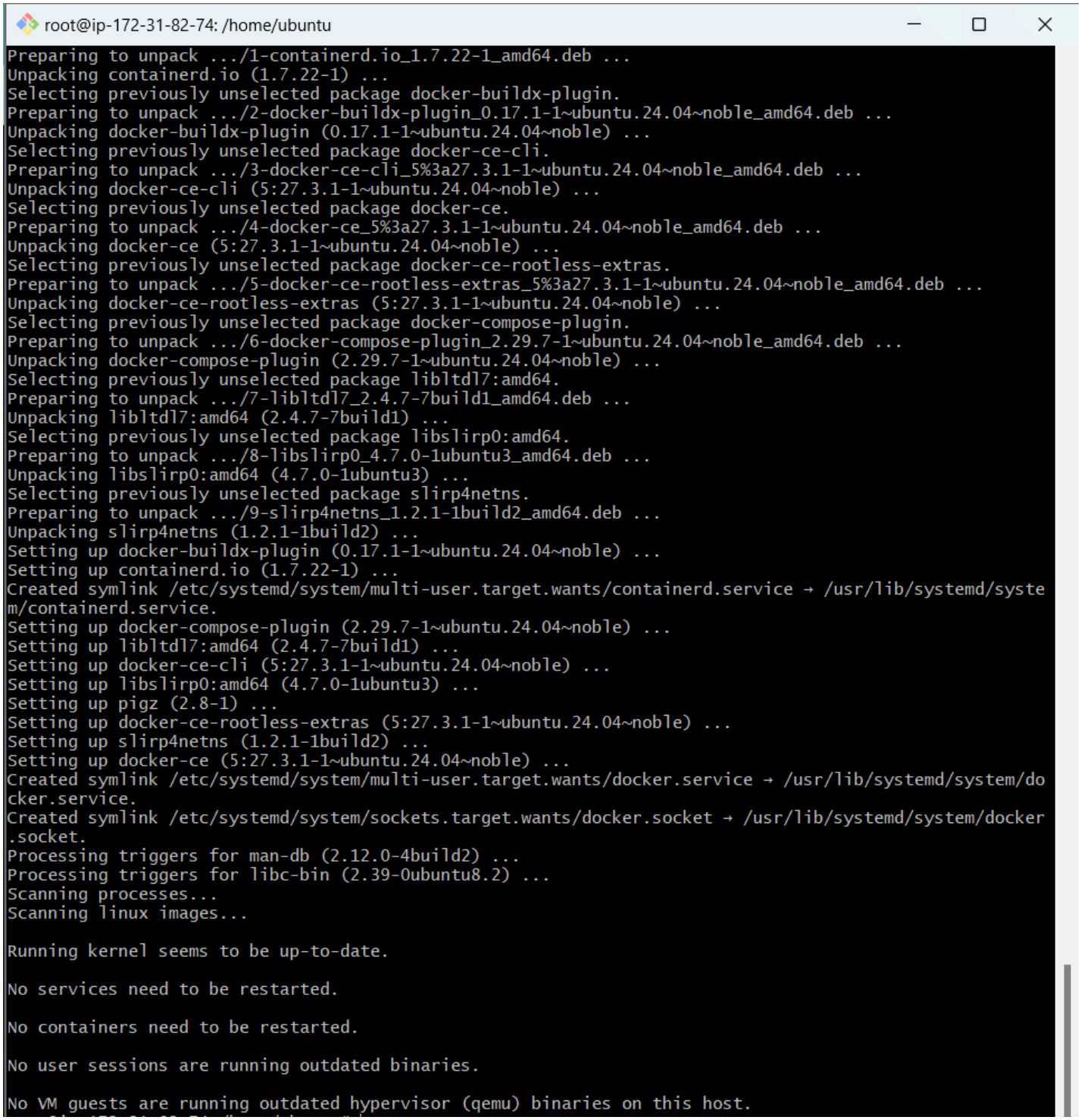
Lab 4








root@ip-172-31-82-74: /home/ubuntu
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [378 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [82.0 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [4528 B]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [271 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [115 kB]
Get:15 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [8632 B]
Get:16 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [10.1 kB]
Get:17 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [353 kB]
Get:18 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [68.1 kB]
Get:19 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [428 B]
Get:20 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [10.9 kB]
Get:21 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [2808 B]
Get:22 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:23 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [344 B]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [531 kB]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [129 kB]
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [8600 B]
Get:32 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [374 kB]
Get:33 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [154 kB]
Get:34 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [45.0 kB]
Get:35 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [14.6 kB]
Get:36 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [353 kB]
Get:37 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [68.1 kB]
Get:38 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [424 B]
Get:39 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [14.4 kB]
Get:40 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3608 B]
Get:41 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [212 B]
Get:42 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [532 B]
Get:43 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:44 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]
Get:45 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [10.6 kB]
Get:46 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [10.8 kB]
Get:47 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [17.6 kB]
Get:48 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [1104 B]
Get:49 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:50 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 c-n-f Metadata [116 B]
Get:51 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:52 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 c-n-f Metadata [116 B]
Fetched 29.1 MB in 4s (7907 kB/s)
Reading package lists... Done
root@ip-172-31-82-74:/home/ubuntu#



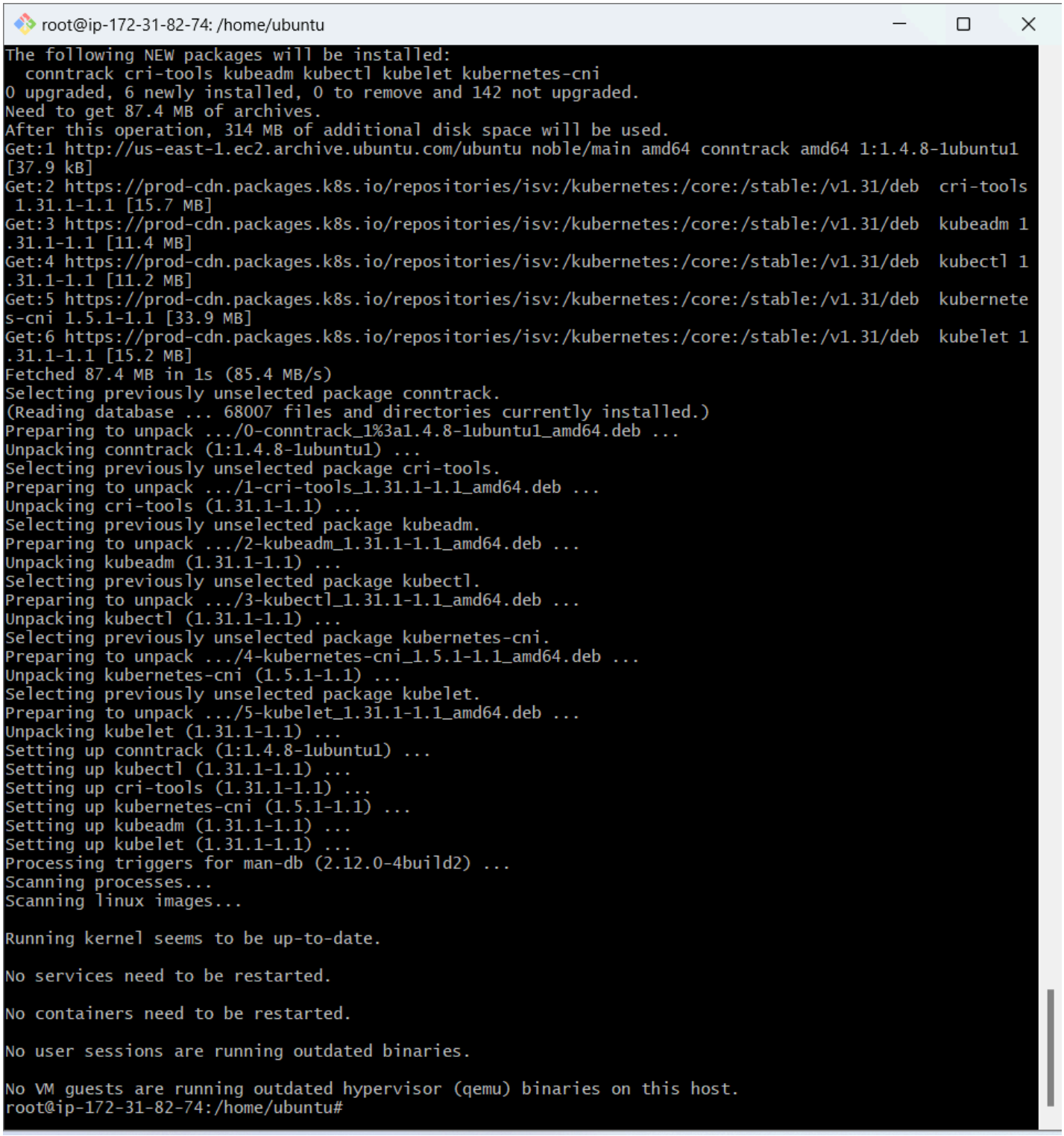

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-82-74:/home/ubuntu# sudo mkdir -p /etc/docker
root@ip-172-31-82-74:/home/ubuntu# cat <<EOF | sudo tee /etc/docker/daemon.json
{
"exec-opts": ["native.cgroupdriver=systemd"]
}
EOF
{
"exec-opts": ["native.cgroupdriver=systemd"]
}
root@ip-172-31-82-74:/home/ubuntu#
```

```
Executing: /usr/lib/systemd/systemd-sysv-install enable docker
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl daemon-reload
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl restart docker
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.31/deb/Release.key |
 sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
root@ip-172-31-82-74:/home/ubuntu#
```

root@ip-172-31-82-74: /home/ubuntu

```
"exec-opts": ["native.cgroupdriver=systemd"]
}
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /usr/lib/systemd/systemd-sysv-insta
ll.
Executing: /usr/lib/systemd/systemd-sysv-install enable docker
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl daemon-reload
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl restart docker
root@ip-172-31-82-74:/home/ubuntu# curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.31/deb/Release.key |
 sudo gpg --dearmor -o
/etc/apt/keyrings/kubernetes-apt-keyring.gpg
gpg: missing argument for option "-o"
bash: /etc/apt/keyrings/kubernetes-apt-keyring.gpg: No such file or directory
root@ip-172-31-82-74:/home/ubuntu# ^C
root@ip-172-31-82-74:/home/ubuntu# curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.31/deb/Release.key |
 sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
root@ip-172-31-82-74:/home/ubuntu# echo 'deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg]
https://pkgs.k8s.io/core:/stable:/v1.31/deb/ /' | sudo tee /etc/apt/sources.list.d/kubernetes.list
deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg]
https://pkgs.k8s.io/core:/stable:/v1.31/deb/ /
root@ip-172-31-82-74:/home/ubuntu# sudo apt-get update
E: Malformed entry 1 in list file /etc/apt/sources.list.d/kubernetes.list (URI)
E: The list of sources could not be read.
root@ip-172-31-82-74:/home/ubuntu# ^C
root@ip-172-31-82-74:/home/ubuntu# deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg] https:/
/pkgs.k8s.io/core:/stable:/v1.31/deb/ /
Command 'deb' not found, did you mean:
  command 'den' from snap den (1.2.0-0)
  command 'dub' from snap dub (1.19.0)
  command 'dab' from deb bsdgames (2.17-30)
  command 'dub' from deb dub (1.34.0-1)
  command 'edb' from deb edb-debugger (1.3.0-2.1)
  command 'debi' from deb devscripts (2.23.7)
  command 'debc' from deb devscripts (2.23.7)
  command 'dex' from deb dex (0.9.0-2)
  command 'deb3' from deb quilt (0.67+really0.67-4)
  command 'dcb' from deb iproute2 (6.1.0-1ubuntu2)
  command 'derb' from deb icu-devtools (74.2-1ubuntu3.1)
See 'snap info <snapname>' for additional versions.
root@ip-172-31-82-74:/home/ubuntu# sudo nano /etc/apt/sources.list.d/kubernetes.list
root@ip-172-31-82-74:/home/ubuntu# sudo apt-get update
E: Malformed entry 1 in list file /etc/apt/sources.list.d/kubernetes.list (URI)
E: The list of sources could not be read.
root@ip-172-31-82-74:/home/ubuntu# sudo nano /etc/apt/sources.list.d/kubernetes.list
root@ip-172-31-82-74:/home/ubuntu# sudo apt-get update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 https://download.docker.com/linux/ubuntu noble InRelease
Hit:6 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:5 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb  InRelease
 [1186 B]
Get:7 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb  Packages
[4865 B]
Fetched 6051 B in 1s (11.5 kB/s)
Reading package lists... Done
root@ip-172-31-82-74:/home/ubuntu#
```


root@ip-172-31-82-74: /home/ubuntu
The following NEW packages will be installed:
conntrack cri-tools kubeadm kubectl kubelet kubernetes-cni
0 upgraded, 6 newly installed, 0 to remove and 142 not upgraded.
Need to get 87.4 MB of archives.
After this operation, 314 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 conntrack amd64 1:1.4.8-1ubuntu1 [37.9 kB]
Get:2 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb cri-tools 1.31.1-1.1 [15.7 MB]
Get:3 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb kubeadm 1.31.1-1.1 [11.4 MB]
Get:4 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb kubectl 1.31.1-1.1 [11.2 MB]
Get:5 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb kubernetes-cni 1.5.1-1.1 [33.9 MB]
Get:6 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb kubelet 1.31.1-1.1 [15.2 MB]
Fetched 87.4 MB in 1s (85.4 MB/s)
Selecting previously unselected package conntrack.
(Reading database ... 68007 files and directories currently installed.)
Preparing to unpack .../0-conntrack_1%3a1.4.8-1ubuntu1_amd64.deb ...
Unpacking conntrack (1:1.4.8-1ubuntu1) ...
Selecting previously unselected package cri-tools.
Preparing to unpack .../1-cri-tools_1.31.1-1.1_amd64.deb ...
Unpacking cri-tools (1.31.1-1.1) ...
Selecting previously unselected package kubeadm.
Preparing to unpack .../2-kubeadm_1.31.1-1.1_amd64.deb ...
Unpacking kubeadm (1.31.1-1.1) ...
Selecting previously unselected package kubectl.
Preparing to unpack .../3-kubectl_1.31.1-1.1_amd64.deb ...
Unpacking kubectl (1.31.1-1.1) ...
Selecting previously unselected package kubernetes-cni.
Preparing to unpack .../4-kubernetes-cni_1.5.1-1.1_amd64.deb ...
Unpacking kubernetes-cni (1.5.1-1.1) ...
Selecting previously unselected package kubelet.
Preparing to unpack .../5-kubelet_1.31.1-1.1_amd64.deb ...
Unpacking kubelet (1.31.1-1.1) ...
Setting up conntrack (1:1.4.8-1ubuntu1) ...
Setting up kubectl (1.31.1-1.1) ...
Setting up cri-tools (1.31.1-1.1) ...
Setting up kubernetes-cni (1.5.1-1.1) ...
Setting up kubeadm (1.31.1-1.1) ...
Setting up kubelet (1.31.1-1.1) ...
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.
root@ip-172-31-82-74:/home/ubuntu#

```
root@ip-172-31-82-74:/home/ubuntu# sudo apt-mark hold kubelet kubeadm kubectl
kubelet set on hold.
kubeadm set on hold.
kubectl set on hold.
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl enable --now kubelet
root@ip-172-31-82-74:/home/ubuntu# sudo kubeadm init --pod-network-cidr=10.244.0.0/16
[init] Using Kubernetes version: v1.31.0
[preflight] Running pre-flight checks
W0926 08:45:24.774275    4285 checks.go:1080] [preflight] WARNING: Couldn't create the interface used f
or talking to the container runtime: failed to create new CRI runtime service: validate service connect
ion: validate CRI v1 runtime API for endpoint "unix:///var/run/containerd/containerd.sock": rpc error:
code = Unimplemented desc = unknown service runtime.v1.RuntimeService
        [WARNING FileExisting-socat]: socat not found in system path
[preflight] Pulling images required for setting up a Kubernetes cluster
[preflight] This might take a minute or two, depending on the speed of your internet connection
[preflight] You can also perform this action beforehand using 'kubeadm config images pull'
error execution phase preflight: [preflight] Some fatal errors occurred:
failed to create new CRI runtime service: validate service connection: validate CRI v1 runtime API for
endpoint "unix:///var/run/containerd/containerd.sock": rpc error: code = Unimplemented desc = unknown s
ervice runtime.v1.RuntimeService[preflight] If you know what you are doing, you can make a check non-fa
tal with `--ignore-preflight-errors=...`
To see the stack trace of this error execute with --v=5 or higher
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# sudo apt-get install -y containerd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  docker-buildx-plugin docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libltdl7
  libslirp0 pigz slirp4netns
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  runc
The following packages will be REMOVED:
  containerd.io docker-ce
The following NEW packages will be installed:
  containerd runc
0 upgraded, 2 newly installed, 2 to remove and 142 not upgraded.
Need to get 47.2 MB of archives.
After this operation, 53.1 MB disk space will be freed.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 runc amd64 1.1.12-0ubuntu
3.1 [8599 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 containerd amd64 1.7.12-0
ubuntu4.1 [38.6 MB]
Fetched 47.2 MB in 1s (78.9 MB/s)
(Reading database ... 68064 files and directories currently installed.)
Removing docker-ce (5:27.3.1-1~ubuntu.24.04~noble) ...
Removing containerd.io (1.7.22-1) ...
Selecting previously unselected package runc.
(Reading database ... 68044 files and directories currently installed.)
Preparing to unpack .../runc_1.1.12-0ubuntu3.1_amd64.deb ...
Unpacking runc (1.1.12-0ubuntu3.1) ...
Selecting previously unselected package containerd.
Preparing to unpack .../containerd_1.7.12-0ubuntu4.1_amd64.deb ...
Unpacking containerd (1.7.12-0ubuntu4.1) ...
Setting up runc (1.1.12-0ubuntu3.1) ...
Setting up containerd (1.7.12-0ubuntu4.1) ...
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.
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# sudo mkdir -p /etc/containerd
sudo containerd config default | sudo tee /etc/containerd/config.toml
disabled_plugins = []
imports = []
oom_score = 0
plugin_dir = ""
required_plugins = []
root = "/var/lib/containerd"
state = "/run/containerd"
temp = ""
version = 2

[cgroup]
  path = ""

[debug]
  address = ""
  format = ""
  gid = 0
  level = ""
  uid = 0

[grpc]
  address = "/run/containerd/containerd.sock"
  gid = 0
  max_recv_message_size = 16777216
  max_send_message_size = 16777216
  tcp_address = ""
  tcp_tls_ca = ""
  tcp_tls_cert = ""
  tcp_tls_key = ""
  uid = 0

[metrics]
  address = ""
  grpc_histogram = false

[plugins]

  [plugins."io.containerd.gc.v1.scheduler"]
    deletion_threshold = 0
    mutation_threshold = 100
    pause_threshold = 0.02
    schedule_delay = "0s"
    startup_delay = "100ms"

  [plugins."io.containerd.grpc.v1.cri"]
    cdi_spec_dirs = ["/etc/cdi", "/var/run/cdi"]
    device_ownership_from_security_context = false
    disable_apparmor = false
    disable_cgroup = false
    disable_hugetlb_controller = true
    disable_proc_mount = false
    disable_tcp_service = true
    drain_exec_sync_io_timeout = "0s"
```

...

```
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl restart containerd
sudo systemctl enable containerd
root@ip-172-31-82-74:/home/ubuntu# sudo systemctl status containerd
● containerd.service - containerd container runtime
     Loaded: loaded (/usr/lib/systemd/system/containerd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2024-09-26 08:47:02 UTC; 18s ago
       Docs: https://containerd.io
   Main PID: 4682 (containerd)
      Tasks: 7
     Memory: 13.8M (peak: 14.3M)
        CPU: 111ms
     CGroup: /system.slice/containerd.service
             └─4682 /usr/bin/containerd

Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292205693Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292247111Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292297409Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292314172Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292322854Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292329036Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292225859Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292401004Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 containerd[4682]: time="2024-09-26T08:47:02.292461784Z" level=info msg>
Sep 26 08:47:02 ip-172-31-82-74 systemd[1]: Started containerd.service - containerd container runtime.
lines 1-21/21 (END)
```

```
root@ip-172-31-82-74:/home/ubuntu# sudo apt-get install -y socat
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  docker-buildx-plugin docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libltdl7
  libslirp0 pigz slirp4netns
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  socat
0 upgraded, 1 newly installed, 0 to remove and 142 not upgraded.
Need to get 374 kB of archives.
After this operation, 1649 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 socat amd64 1.8.0.0-4build3 [374
kB]
Fetched 374 kB in 0s (16.8 MB/s)
Selecting previously unselected package socat.
(Reading database ... 68108 files and directories currently installed.)
Preparing to unpack .../socat_1.8.0.0-4build3_amd64.deb ...
Unpacking socat (1.8.0.0-4build3) ...
Setting up socat (1.8.0.0-4build3) ...
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.
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# sudo kubeadm init --pod-network-cidr=10.244.0.0/16
[init] Using Kubernetes version: v1.31.0
[preflight] Running pre-flight checks
[preflight] Pulling images required for setting up a Kubernetes cluster
[preflight] This might take a minute or two, depending on the speed of your internet connection
[preflight] You can also perform this action beforehand using 'kubeadm config images pull'
W0926 08:48:37.791398    4906 checks.go:846] detected that the sandbox image "registry.k8s.io/pause:3.8
" of the container runtime is inconsistent with that used by kubeadm.It is recommended to use "registry
.k8s.io/pause:3.10" as the CRI sandbox image.
[certs] Using certificateDir folder "/etc/kubernetes/pki"
[certs] Generating "ca" certificate and key
[certs] Generating "apiserver" certificate and key
[certs] apiserver serving cert is signed for DNS names [ip-172-31-82-74 kubernetes kubernetes.default k
ubernetes.default.svc kubernetes.default.svc.cluster.local] and IPs [10.96.0.1 172.31.82.74]
[certs] Generating "apiserver-kubelet-client" certificate and key
[certs] Generating "front-proxy-ca" certificate and key
[certs] Generating "front-proxy-client" certificate and key
[certs] Generating "etcd/ca" certificate and key
[certs] Generating "etcd/server" certificate and key
[certs] etcd/server serving cert is signed for DNS names [ip-172-31-82-74 localhost] and IPs [172.31.82
.74 127.0.0.1 ::1]
[certs] Generating "etcd/peer" certificate and key
[certs] etcd/peer serving cert is signed for DNS names [ip-172-31-82-74 localhost] and IPs [172.31.82.7
4 127.0.0.1 ::1]
[certs] Generating "etcd/healthcheck-client" certificate and key
[certs] Generating "apiserver-etcd-client" certificate and key
[certs] Generating "sa" key and public key
[kubeconfig] Using kubeconfig folder "/etc/kubernetes"
[kubeconfig] Writing "admin.conf" kubeconfig file
[kubeconfig] Writing "super-admin.conf" kubeconfig file
[kubeconfig] Writing "kubelet.conf" kubeconfig file
[kubeconfig] Writing "controller-manager.conf" kubeconfig file
[kubeconfig] Writing "scheduler.conf" kubeconfig file
[etcd] Creating static Pod manifest for local etcd in "/etc/kubernetes/manifests"
[control-plane] Using manifest folder "/etc/kubernetes/manifests"
[control-plane] Creating static Pod manifest for "kube-apiserver"
[control-plane] Creating static Pod manifest for "kube-controller-manager"
[control-plane] Creating static Pod manifest for "kube-scheduler"
[kubelet-start] Writing kubelet environment file with flags to file "/var/lib/kubelet/kubeadm-flags.env
"
[kubelet-start] Writing kubelet configuration to file "/var/lib/kubelet/config.yaml"
[kubelet-start] Starting the kubelet
```

```
root@ip-172-31-82-74:/home/ubuntu#  mkdir -p $HOME/.kube
  sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
  sudo chown $(id -u):$(id -g) $HOME/.kube/config
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu#  mkdir -p $HOME/.kube
  sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
  sudo chown $(id -u):$(id -g) $HOME/.kube/config
root@ip-172-31-82-74:/home/ubuntu# kubectl apply -f
https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml
error: flag needs an argument: 'f' in -f
See 'kubectl apply --help' for usage.
bash: https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml: No such f
ile or directory
root@ip-172-31-82-74:/home/ubuntu# kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/ma
ster/Documentation/kube-flannel.yml
namespace/kube-flannel created
clusterrole.rbac.authorization.k8s.io/flannel created
clusterrolebinding.rbac.authorization.k8s.io/flannel created
serviceaccount/flannel created
configmap/kube-flannel-cfg created
daemonset.apps/kube-flannel-ds created
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# kubectl apply -f https://k8s.io/examples/application/deployment.yaml
deployment.apps/nginx-deployment created
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# kubectl apply -f https://k8s.io/examples/application/deployment.yaml
deployment.apps/nginx-deployment created
root@ip-172-31-82-74:/home/ubuntu# kubectl get pods
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-d556bf558-g4cln   0/1     Pending   0          17s
nginx-deployment-d556bf558-zl9p4   0/1     Pending   0          17s
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/ma
ster/Documentation/kube-flannel.yml
namespace/kube-flannel created
clusterrole.rbac.authorization.k8s.io/flannel created
clusterrolebinding.rbac.authorization.k8s.io/flannel created
serviceaccount/flannel created
configmap/kube-flannel-cfg created
daemonset.apps/kube-flannel-ds created
root@ip-172-31-82-74:/home/ubuntu# kubectl apply -f https://k8s.io/examples/application/deployment.yaml
deployment.apps/nginx-deployment created
root@ip-172-31-82-74:/home/ubuntu# kubectl get pods
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-d556bf558-g4cln   0/1     Pending   0          17s
nginx-deployment-d556bf558-zl9p4   0/1     Pending   0          17s
root@ip-172-31-82-74:/home/ubuntu# POD_NAME=$(kubectl get pods -l app=nginx -o jsonpath="{.items[0].met
adata.name}")
root@ip-172-31-82-74:/home/ubuntu# kubectl port-forward $POD_NAME 8080:80
error: unable to forward port because pod is not running. Current status=Pending
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# ^C
root@ip-172-31-82-74:/home/ubuntu# kubectl taint nodes --all node-role.kubernetes.io/control-plane-
node/ip-172-31-82-74 untainted
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# kubectl get nodes
NAME              STATUS   ROLES           AGE     VERSION
ip-172-31-82-74   Ready    control-plane   5m24s   v1.31.1
root@ip-172-31-82-74:/home/ubuntu#
```

```
root@ip-172-31-82-74:/home/ubuntu# kubectl get nodes
NAME              STATUS   ROLES           AGE     VERSION
ip-172-31-82-74   Ready    control-plane   5m24s   v1.31.1
root@ip-172-31-82-74:/home/ubuntu# kubectl get pods
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-d556bf558-g4cln   1/1     Running   0          3m27s
nginx-deployment-d556bf558-zl9p4   1/1     Running   0          3m27s
root@ip-172-31-82-74:/home/ubuntu# POD_NAME=$(kubectl get pods -l app=nginx -o jsonpath="{.items[0].met
adata.name}")
root@ip-172-31-82-74:/home/ubuntu# kubectl port-forward $POD_NAME 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
```

```
root@ip-172-31-82-74:/home/ubuntu# kubectl get nodes
NAME               STATUS   ROLES           AGE     VERSION
ip-172-31-82-74    Ready    control-plane   5m24s   v1.31.1
root@ip-172-31-82-74:/home/ubuntu# kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
nginx-deployment-d556bf558-g4cln    1/1     Running   0          3m27s
nginx-deployment-d556bf558-zl9p4    1/1     Running   0          3m27s
root@ip-172-31-82-74:/home/ubuntu# POD_NAME=$(kubectl get pods -l app=nginx -o jsonpath="{.items[0].met
adata.name}")
root@ip-172-31-82-74:/home/ubuntu# kubectl port-forward $POD_NAME 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
```