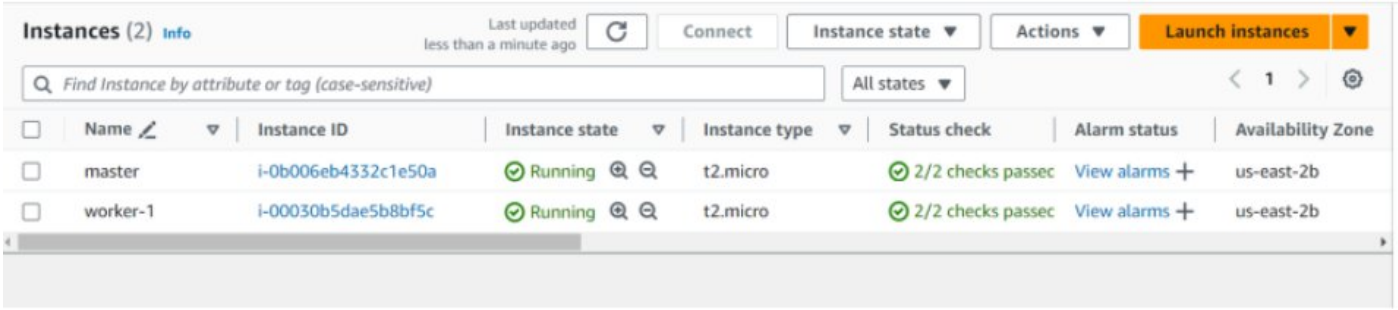
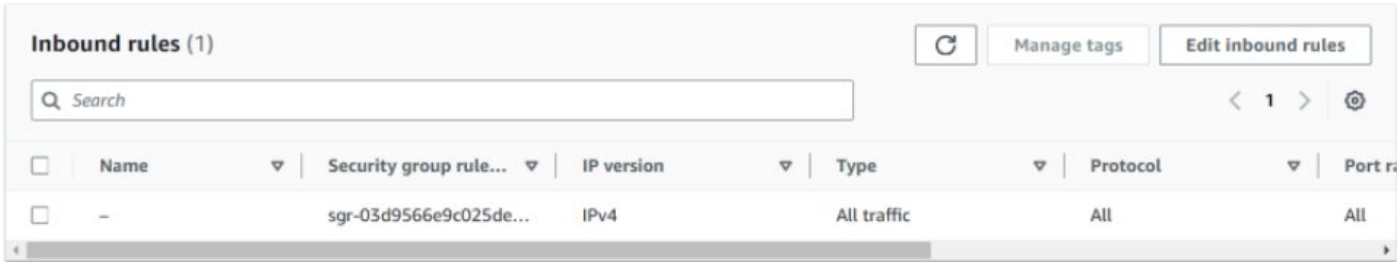
Jai Talreja 61 D15A

Screenshots for Experiment 3.






```
ubuntu@ip-172-31-18-146:~$ sudo hostnamectl set-hostname worker
```

```
ubuntu@master:~$ sudo apt-get update
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
```

```
ubuntu@master:~$ sudo apt-get install 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:
```

```
Processing triggers for dbus (1.14.10-4ubuntu4) ...
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No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

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```
ubuntu@master:~$  sudo systemctl enable docker
ubuntu@master:~$ 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 Sun 2024-09-15 15:23:25 UTC; 5min ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 2653 (dockerd)
      Tasks: 8
     Memory: 31.8M (peak: 33.4M)
        CPU: 299ms
     CGroup: /system.slice/docker.service
             └─2653 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
```

```
ubuntu@worker:~$ sudo apt-get update
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
```

```
ubuntu@master:~$ sudo apt-get install -y apt-transport-https ca-certificates curl gpg
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20240203).
ca-certificates set to manually installed.
gpg is already the newest version (2.4.4-2ubuntu17).
gpg set to manually installed.
The following NEW packages will be installed:
  apt-transport-https
The following packages will be upgraded:
  curl libcurl3t64-gnutls libcurl4t64
3 upgraded, 1 newly installed, 0 to remove and 130 not upgraded.
Need to get 904 kB of archives.
After this operation, 38.9 kB of additional disk space will be used.
```

```
ubuntu@master:~$ curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.31/deb/Release.key | sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
ubuntu@master:~$ 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/ /
ubuntu@master:~$ sudo apt-get update
```

```
ubuntu@master:~$ sudo apt-get install -y kubelet kubeadm kubectl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  conntrack cri-tools kubernetes-cni
The following NEW packages will be installed:
  conntrack cri-tools kubeadm kubectl kubelet kubernetes-cni
0 upgraded, 6 newly installed, 0 to remove and 130 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-2.ec2.archive.ubuntu.com/ubuntu noble/main amd64 conntrack amd64 1:1.4.8
Get:2 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb
Get:3 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb
Get:4 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb
Get:5 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb
Get:6 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.31/deb
Fetched 87.4 MB in 1s (70.9 MB/s)
Selecting previously unselected package conntrack.
(Reading database ... 68112 files and directories currently installed.)
```

```
ubuntu@master:~$ sudo apt-mark hold kubelet kubeadm kubectl
kubelet set on hold.
kubeadm set on hold.
kubectl set on hold.
ubuntu@master:~$
```

```
ubuntu@master:~$ sudo kubeadm init --pod-network-cidr=10.244.0.0/16 --ignore-preflight-errors=all
[init] Using Kubernetes version: v1.31.0
[preflight] Running pre-flight checks
        [WARNING NumCPU]: the number of available CPUs 1 is less than the required 2
        [WARNING Mem]: the system RAM (957 MB) is less than the minimum 1700 MB
        [WARNING FileExisting-socat]: socat not found in system path
```

```
Your Kubernetes control-plane has initialized successfully!

To start using your cluster, you need to run the following as a regular user:

  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 172.31.25.196:6443 --token wb5xks.0x5kyf3rpycusd60 \
        --discovery-token-ca-cert-hash sha256:4fa35dc1d8d64ac6f31ebe712f3ec1d5c8a38ba8a8fb316579c08b671eabbd06
```

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

```
ubuntu@master:~$ kubectl apply -f https://github.com/flannel-io/flannel/releases/latest/download/kube-flannel.yml
namespace/kube-flannel created
serviceaccount/flannel created
clusterrole.rbac.authorization.k8s.io/flannel created
clusterrolebinding.rbac.authorization.k8s.io/flannel created
configmap/kube-flannel-cfg created
daemonset.apps/kube-flannel-ds created
```

```
ubuntu@worker:~$ sudo kubeadm join 172.31.25.196:6443 --token wb5xks.0x5kyf3rpycusd60 --discovery-token-ca-cert-hash sha256:4fa35dc1d8d64
ac6f31ebe712f3ec1d5c8a38ba8a8fb316579c08b671eabbd06 --ignore-preflight-errors=all
[preflight] Running pre-flight checks
        [WARNING FileAvailable--etc-kubernetes-kubelet.conf]: /etc/kubernetes/kubelet.conf already exists
        [WARNING FileExisting-socat]: socat not found in system path
        [WARNING Port-10250]: Port 10250 is in use
        [WARNING FileAvailable--etc-kubernetes-pki-ca.crt]: /etc/kubernetes/pki/ca.crt already exists
[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-check] Waiting for a healthy kubelet at http://127.0.0.1:10248/healthz. This can take up to 4m0s
[kubelet-check] The kubelet is healthy after 503.838994ms
[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.
```

```
ubuntu@master:~$ kubectl get pods --all-namespaces
NAMESPACE      NAME                              READY   STATUS             RESTARTS         AGE
kube-flannel   kube-flannel-ds-8z8zq             1/1     Running            1 (6m12s ago)    21m
kube-flannel   kube-flannel-ds-src45             1/1     Running            2 (5m16s ago)    16m
kube-system    coredns-7c65d6cfc9-4lmp4          1/1     Running            1 (6m12s ago)    30m
kube-system    coredns-7c65d6cfc9-fnrrt          1/1     Running            1 (6m12s ago)    30m
kube-system    etcd-master                       1/1     Running            1 (6m12s ago)    30m
kube-system    kube-apiserver-master             1/1     Running            1 (6m12s ago)    30m
kube-system    kube-controller-manager-master    1/1     Running            1 (6m12s ago)    30m
kube-system    kube-proxy-hw6zm                  0/1     CrashLoopBackOff   9 (29s ago)      16m
kube-system    kube-proxy-x6lmb                  1/1     Running            11 (2m8s ago)    30m
kube-system    kube-scheduler-master             1/1     Running            1 (6m12s ago)    30m
ubuntu@master:~$ kubectl delete node worker
node "worker" deleted
ubuntu@master:~$ kubectl get nodes
NAME     STATUS   ROLES           AGE   VERSION
master   Ready    control-plane   35m   v1.31.1
worker   Ready    <none>          87s   v1.31.1
```